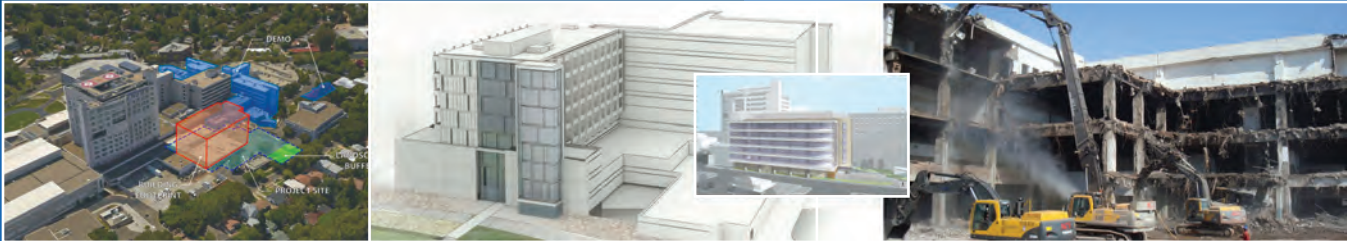


UC Davis Sacramento Campus

Hospital Seismic Demolition and Office Replacement

DRAFT ENVIRONMENTAL IMPACT REPORT
SCH #2015072012



August 2015

**UC Davis Sacramento Campus
Hospital Seismic Demolition and
Office Replacement
Draft Environmental Impact Report**

SCH # 2015072012

August 2015

Prepared for:

University of California, Davis

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University of California

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2.0 EXECUTIVE SUMMARY

2.1 PURPOSE

This Draft Tiered Environmental Impact Report (EIR) evaluates the potentially significant environmental effects of the proposed Hospital Seismic Demolition and Office Replacement project (project or proposed project). This Executive Summary is intended to provide the decision makers, responsible agencies, and the public with a clear, simple, and concise description of the proposed project and its potential significant environmental impacts. The *California Environmental Quality Act (CEQA) Guidelines* (Section 15123) require that a summary be included in an EIR that identifies all major conclusions, identifies each significant effect, recommended mitigation measure(s), and describes alternatives that would minimize or avoid potential significant impacts of the proposed project. The summary is also required to identify areas of controversy known to the lead agency, including issues raised by agencies and the public and issues to be resolved.

2.2 PROJECT LOCATION

The approximately 142-acre UC Davis Medical Center (Sacramento campus) is located in the City of Sacramento, approximately 2.5 miles southeast of downtown Sacramento, 17 miles east of the UC Davis main campus, and 90 miles northeast of San Francisco (see **Figure 3.0-1, Sacramento Campus Regional Location Map**). The Sacramento campus is bound by V Street on the north, Stockton Boulevard to the west, Broadway to the south, and a residential neighborhood to the east.

The Main Hospital and clinical facilities located on the Sacramento campus provide acute care and general care services to residents of the County of Sacramento. As depicted in **Figure 3.0-2, Existing UC Davis Sacramento Campus**, the existing campus is organized into four general land use zones or functional areas, consisting of (1) Hospital, (2) Ambulatory Care, (3) Education and Research, and (4) Support Services zones. The proposed project is located within the Hospital zone in the northwestern portion of the campus.

2.3 PROJECT DESCRIPTION

The UC Davis Health System (UCDHS) proposes to implement the proposed project to improve seismic safety and provide replacement office space at the Sacramento campus. The proposed project includes: (1) the construction of the approximately 130,000 gross square foot (GSF)¹ North Addition Office Building;

¹ GSF = Gross Square Feet - The sum of all areas on all floors of a building included within the outside faces of its exterior walls, including all vertical penetration areas, for circulation and shaft areas that connect one floor to another.

(2) demolition of the approximately 235,000 GSF North/South Main Hospital Wing, and the subsequent ‘re-skinning’ of the remaining hospital structures; and (3) the demolition of the approximately 20,000 GSF Housestaff Building. In total, the project would reduce building space on the Sacramento campus by approximately 125,000 GSF.

The North Addition Office Building would provide replacement office space for staff currently working in the North/South Wing of the Main Hospital, as well as staff currently located in the Cypress Building and the off campus Sherman Building. The proposed building would be a six-story building located in the northern portion of the Sacramento campus between V Street and the Main Hospital Complex just north of the East Wing and the Davis Tower. The building would have a footprint of approximately 21,000 square feet (SF), with the remaining site area redeveloped as an entry plaza and courtyard for the south side of the building and enhanced pedestrian circulation around the perimeter of the building. The North/South Wing would be demolished as part of the proposed project in order to remove seismically deficient facilities. With removal of the North/South Wing of the Main Hospital, the remaining western edge of the hospital would have no exterior wall. A new façade on the western face of the hospital would be constructed to provide a finished exterior to the remaining building. Upon removal of the North/South Wing, the site of the former structure would be redeveloped and landscaped to create a pedestrian plaza area.

The Housestaff Building currently provides space for clinical pastoral services and transplant staff offices. The two-story building is seismically deficient and would be demolished as part of the project. The site of the building would be developed into a pedestrian plaza area and landscaped.

Project construction and demolition are expected to take place from 2016 through 2022 with construction access provided from Stockton Boulevard via Colonial Way; no construction site access or traffic would be allowed on V Street.

2.4 PROJECT NEED AND OBJECTIVES

Need

The proposed project would provide modern replacement space for seismically deficient and outdated facilities on the Sacramento campus.

ASF = Assignable Square Feet - The sum of all areas on all floors of a building assigned to, or available for assignment to, an occupant or specific use (classrooms, labs, offices, study facilities, special use, general use, support, health care, residential, and unclassified – that are used to accomplish the institution’s mission).

Following the deadly 1994 Northridge earthquake, hospital acute care facilities in California are subject to seismic safety mandates outlined in the State of California Senate Bill (SB) 1953. Compliance with SB 1953 has been an integral component of UCDHS facility planning, and significant progress toward meeting state seismic mandates has occurred in recent years. The construction of the Davis Tower (May 1999), and the subsequent build-out of its six floors of shelled space (1999-2009) for inpatient beds, as well as the completion of the Surgery and Emergency Services Pavilion (October 2010), has made way for virtually all of UCDHS's inpatient beds and critical systems to be located in facilities that are seismically compliant. Over the past four years, patient care spaces have been relocated to the Surgery and Emergency Services Pavilion Project, including the Operating Room Suite, Emergency Department, Clinical Lab, Radiology, and Dietary Services.

The approximately 235,000 GSF North/South Wing of the Sacramento campus Main Hospital complex is a "Structural Performance Category 1" structure per OSHPD standards. To comply with state seismic mandates and maintain hospital licensure, the UCDHS intends to vacate and disconnect the North/South Wing from the adjoining Main Hospital complex by the 2020 deadline.

At present, the North/South Wing is home to two acute care units (Apheresis and Dialysis unit, and Children's Surgery Center and Hospitalists), some support units (such as Environmental Services, Child Life Program, and Gift Shop Storage), and several key administrative units which directly serve the Main Hospital complex. The key administrative units located within the North/South Wing are:

- Hospital Administration and Operations
- Heart and Vascular Center
- Patient Care Services
- Pharmacy Operations
- Physical Medicine & Rehabilitation Therapies
- Performance Excellence
- Neurology
- Infection Prevention
- Pastoral Services (limited to only a portion of this program, with most of the space located in the Housestaff Building)

To house the displaced hospital administrative units listed above, UCDHS is proposing to construct the North Addition Office Building. The remaining Apheresis and Dialysis units, and Children's Surgery

Center and Hospitalists have approved projects for relocation to other areas of the Main Hospital complex (University Tower 1st Floor and Surgery and Emergency Services Pavilion, respectively). The new building would also provide space for the relocation of programs currently located in the Cypress Building and the off campus Sherman Building.

Another nearby building on the Sacramento campus, the Housestaff Building, which currently provides space for clinical pastoral services and transplant staff offices, is also seismically deficient. The two-story building was constructed in 1916 and has a seismic safety rating of very poor. Programs located in that building would be located to the Cypress and Sherman Buildings and the Housestaff Building would be demolished as part of the project.

Project Objectives

The overall project objectives are to:

- Provide replacement space for offices and support functions in the seismically deficient North/South Wing.
- Promote synergy and consolidate departments focused on enhancing quality and the patient experience.
- Respect the residential neighborhood to the north.
- Foster highest and best use of space adjacent to the hospital.
- Provide modest amount of growth space for academic offices.
- Replace the hospital command center displaced by the Tower 1 renovation project.
- Achieve UC sustainability goals for energy performance.
- Create high quality office environment at reasonable cost.
- Provide office space as non-OSHPD space separate from hospital building.
- Complement the aesthetic and operational aspects of the existing hospital buildings.
- Create adjacent outdoor plaza/garden space

2.5 AREAS OF CONTROVERSY KNOWN TO THE UNIVERSITY

Although not necessarily areas of controversy, specific issues that were raised in written scoping comments include potential impacts of the proposed project on nearby residences. In addition, several

commenters expressed a desire for the Housestaff building to be recognized as having historical value and saved if possible. All of the scoping comments are addressed in the impact analysis.

2.6 ALTERNATIVES

Consistent with CEQA requirements, a reasonable range of alternatives were evaluated and considered in an effort to assist in the identification of an environmentally superior alternative. The alternatives analyzed in detail in this Draft EIR are presented below.

2.6.1 Alternative 1: No Project

Under the No Project Alternative, a new office building to house programs being relocated out of the Housestaff Building and the North/South Wing of the Main Hospital would not be constructed. However due to seismic safety concerns and meet the OSHPD mandate, programs located in the two buildings would need to be relocated into other existing building space. A single leased space that satisfies the distance or square footage requirements for the programs being relocated out of the North/South Wing is not available. Therefore, under the No Project Alternative, the various relocated programs would move into existing on-campus space and off-campus leased space. The programs would therefore be dispersed and would not have the benefit that would result from provision of the space necessary for consolidation of the programs, as well as convenient access to the Main Hospital.

2.6.2 Alternative 2: Reduced Building Size Alternative

This alternative would reduce the size of the proposed North Addition Office Building by two floors (approximately 43,500 GSF), in comparison with the proposed project's approximately 130,000 GSF, six-story building. This reduction in building space in the new building would require that the UCDHS either construct a smaller building in another location on the campus or relocate the unhoused programs into existing on-campus space (if available) and/or secure leased space in existing buildings near the campus. No other changes to the proposed project are included in this alternative; the demolition of the Housestaff Building and the North/South Wing, along with the construction of the new façade and the two new pedestrian plaza areas would remain the same as under the proposed project. As such, access, circulation, and landscape features (including the landscape buffer on the northern edge of the campus) would be generally similar to those under the proposed project.

The intent of this alternative is to reduce the time needed to construct the building and thereby reduce significant impacts of the proposed project related to noise associated with construction of the North Addition Office Building.

2.7 IMPACT SUMMARY

A detailed discussion regarding potential impacts of the proposed project is provided in **Section 4.0, Environmental Setting, Impacts, and Mitigation Measures**. A summary of the impacts of the proposed project is provided in **Table 2.0-1, Summary of Project Impacts and Mitigation Measures**. Also provided in **Table 2.0-1** are mitigation measures that are proposed to avoid or reduce significant and less than significant project impacts. The table indicates whether implementation of the recommended mitigation measures would reduce the impact to a less than significant level. **Table 2.0-2, Summary Comparison of Project Alternatives**, presents the environmental impacts of each alternative to allow the decision makers, agencies and the public to compare and contrast these alternatives and weigh their relative merits and demerits.

**Table 2.0-1
Summary of Project Impacts and Mitigation Measures**

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.1 Aesthetics			
Impact AES-1 Implementation of the proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Impact AES-2 Implementation of the proposed project would create new sources of light and glare that could adversely affect day or nighttime views in the area.	Potentially Significant	AES-1: The use of security lighting during project construction shall be limited to only those locations on the construction site requiring illumination. AES-2: All security lights shall be properly shielded and projected downwards during construction such that light is directed onto the project site only.	Less than Significant
Cumulative Impact AES-1 The proposed project, in conjunction with other past, present and reasonably foreseeable future development, would not result in significant cumulative impacts related to aesthetics.	Less than Significant	No project-level mitigation measures are required.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.2 Air Quality			
Impact AIR-1 Construction of the proposed project would not result in construction emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Impact AIR-2 The proposed project would not result in operational emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation.	No Impact	No project-level mitigation measures are required.	No Impact
Impact AIR-3 Implementation of the proposed project would not expose sensitive receptors to substantial concentrations of carbon monoxide.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Impact AIR-4 Implementation of the proposed project would not expose sensitive receptors to substantial concentrations of toxic air contaminants.	Less than Significant	No project-level mitigation measures are required.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.2 Air Quality (continued)			
Impact AIR-5 Implementation of the proposed project would not conflict with or obstruct implementation of the applicable air quality plan.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Cumulative Impact AIR-1 Implementation of the proposed project would not result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Cumulative Impact AIR-2 Construction and operation of the proposed project, in conjunction with other nearby TAC sources, would not expose sensitive receptors to substantial concentrations of toxic air contaminants.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
4.3 Greenhouse Gas Emissions			
Impact GHG-1 The proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	Less than Significant	No project-level mitigation measures are required.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.3 Greenhouse Gas Emissions (continued)			
Impact GHG-2 The proposed project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	No Impact	No project-level mitigation measures are required.	No Impact
4.4 Hazards and Hazardous Materials			
Impact HAZ-1 Implementation of the proposed project would increase the routine transport, use, storage, and disposal of hazardous materials at the UC Davis Sacramento campus but would not create a significant hazard to the public or the environment under the routine or reasonably foreseeable upset and accident conditions.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Impact HAZ-2 Demolition activities associated with implementation of the proposed project would not expose people to contaminated building materials.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Impact HAZ-3 Implementation of the proposed project would not result in handling of hazardous materials within 0.25 mile of an existing school.	No Impact	No project-level mitigation measures are required.	No Impact

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.4 Hazards and Hazardous Materials (continued)			
Impact HAZ-4 The proposed North Addition Office Building would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Cumulative Impact HAZ-1 The proposed project, in conjunction with other past, present and reasonably foreseeable future development, would not result in significant cumulative impacts related to hazardous materials.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
4.5 Hydrology and Water Quality			
Impact HYDRO-1 Construction and operational activities associated with implementation of the proposed project would not contribute substantial loads of sediment or other pollutants in storm water runoff that could degrade receiving water quality.	Less than Significant	No project-level mitigation measures are required.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.5 Hydrology and Water Quality (continued)			
<p>Cumulative Impact HYDRO-1</p> <p>The proposed project, in conjunction with other reasonably foreseeable other future development in Sacramento, could increase the volume of urban runoff but would not adversely affect receiving water quality.</p>	Less than Significant	No project-level mitigation measures are required.	Less than Significant
4.6 Noise			
<p>Impact NOI-1</p> <p>Construction of the proposed project would expose existing off-site and on-site receptors to elevated noise levels.</p>	Potentially Significant	<p>NOI-1: For each sequence of the North Addition Office Building construction and the North/South Wing Demolition, the following actions will be completed.</p> <ul style="list-style-type: none"> a) The Campus will conduct noise reduction analysis for each sequence of the proposed project. Each sequence will be evaluated once equipment details and exact field conditions for that sequence are known in order to forecast whether the expected exterior noise levels will be below 70 dB(A) during the daytime at the affected sensitive receptors. b) In addition to LRDP Mitigation Measure NOI-1, if the noise reduction analysis completed per item (a) above reveals impacts above the 70 dB(A) threshold, the Campus will modify construction methods to reduce noise impacts to the greatest extent feasible, taking into account cost and sequencing constraints. The Campus will utilize the results of the noise reduction analysis to consider alternative construction/demolition techniques, revised equipment usage dates, specific placement of noise reduction barriers, and alternative equipment to 	Significant and Unavoidable

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		<p>reduce noise.</p> <p>c) Utilizing LRDP EIR noise measurement site LT-1 as a long-term noise monitoring site, the Campus will monitor noise levels throughout the project period to evaluate the effectiveness of LRDP Mitigation Measure NOI-1 and items (a) and (b) above. The monitoring effort will relay to project managers any instances where exterior noise levels at the project boundary exceed 70 dB(A) during the daytime. This data shall be used to evaluate the effectiveness of items (a) and (b), so that actual field conditions produced by the proposed project are compared to the analysis results in item (a). If the analysis results differ from the actual field conditions, project managers shall verify that the items prescribed as a result of item (b) have been properly implemented and adjust equipment usage or noise barriers to reduce noise levels to the greatest extent.</p> <p>d) If item (c) indicates a potential phase that will exceed the 70 dB(A) daytime threshold, such phases shall be limited to the hours of 8:30 AM to 3:30 PM.</p> <p>e) The Campus will notify nearby residents of expected periods with noise that could exceed the 70 dB(A) threshold. Based on the noise reduction analysis conducted above in item (b), nearby residents will be notified of the specific days when noise levels are expected to exceed the 70 dB(A) threshold.</p>	
<p>Impact NOI-2 Construction of the proposed project would not expose sensitive receptors to excessive ground vibration.</p>	<p>Less than Significant</p>	<p>No project-level mitigation measures are required.</p>	<p>Less than Significant</p>

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.6 Noise (continued)			
Impact NOI-3 Vehicular traffic associated with the proposed project would result in an incremental, but imperceptible, long-term increase in ambient noise levels.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Impact NOI-4 The operation of mechanical equipment on the roof of the proposed building would not result in a substantial long-term increase in ambient noise levels.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Impact NOI-5 The proposed project would not expose people to aircraft noise from airports or airstrips.	No Impact	No project-level mitigation measures are required.	No Impact
Cumulative Impact NOI-1 The proposed project, in conjunction with other past, present and reasonably foreseeable future development, would not result in significant cumulative impacts related to noise.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
4.7 Transportation and Traffic			
Impact TRA-1 Implementation of the proposed project could contribute to sub-standard intersection operations.	Potentially Significant	TRA-1: The University shall require the prime contractor to prepare and implement a Construction Traffic Management Plan that will include, but will not necessarily be limited to, the following elements: <ul style="list-style-type: none"> • Identify proposed truck routes to be used; no 	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		<p>construction traffic is to be permitted on V Street.</p> <ul style="list-style-type: none"> • Specify construction hours, including limits on the number of truck trips during the a.m. and p.m. peak traffic periods (7:00 – 9:00 a.m. and 4:00 – 6:00 p.m.), if conditions demonstrate the need. • Include a parking management plan for ensuring that construction worker parking results in minimal disruption to surrounding uses. • Include a public information and signage plan to inform patients, visitors and staff of the planned construction activities, roadway changes/closures, and parking changes. • Store construction materials only in designated areas that minimize impacts to nearby roadways. • Use of California Department of Transportation (Caltrans) certified flag persons for any temporary lane closures to minimize impacts to traffic flow, and to ensure safe access into and out of the project site(s). • Develop circulation and detour plans to minimize impacts to local street impacts from construction activity on nearby major arterials. This may include the use of signing and flagging to guide vehicles through and/or around the construction zone. • Limit the number of lane closures during peak hours to the extent possible. • Install traffic control devices as specified in the California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones. • Develop and implement access plans for potentially impacted local services such as police and fire stations, transit stations, hospitals, schools and parks. The access plans should be developed with the 	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		<p>facility owner or administrator. To minimize disruption of emergency vehicle access, affected jurisdictions should be asked to identify detours for emergency vehicles, which will then be posted by the contractor.</p> <ul style="list-style-type: none"> • Coordinate with local transit agencies for temporary relocation of routes or bus stops in works zones, as necessary. • Include coordination with other projects under construction in the immediate vicinity, so an integrated approach to construction-related traffic can be developed. 	
<p>Cumulative Impact TRA-1 Implementation of the proposed project, in conjunction with other reasonably foreseeable future projects, would not result in significant traffic impacts.</p>	Less than Significant	No project-level mitigation measures are required.	Less than Significant
4.8 Utilities and Service Systems, including Energy			
<p>Impact UTIL-1 Implementation of the proposed project would not exceed wastewater treatment requirements of the Central Valley Regional Water Quality Control Board.</p>	Less than Significant	No project-level mitigation measures are required.	Less than Significant
<p>Impact UTIL-2 The project-related demand for water and wastewater conveyance facilities would not require the expansion of pipes and structures.</p>	Less than Significant	No project-level mitigation measures are required.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.14 Utilities and Service Systems, including Energy (continued)			
Impact UTIL-3 The proposed project would not require expansion of campus storm drainage conveyance and detention facilities.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Impact UTIL-4 The proposed project would not generate additional demand for water and would be served from existing entitlements and resources.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Impact UTIL-5 The proposed project would not generate additional wastewater flows and therefore would not exceed available wastewater treatment capacity.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Impact UTIL-6 The proposed project would not fail to comply with regulations related to solid waste and would not generate solid waste that could not be accommodated by the regional landfill.	Less than Significant	No project-level mitigation measures are required.	Less than Significant
Impact UTIL-7 The proposed project would not require on-site expansion of electrical, steam, and chilled water facilities.	Less than Significant	No project-level mitigation measures are required.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.14 Utilities and Service Systems, including Energy (continued)			
<p>Impact UTIL-8</p> <p>The proposed project would not result in wasteful, inefficient, and unnecessary use of energy; place a significant demand on regional energy supply; or require provision of substantial additional capacity.</p>	Less than Significant	No project-level mitigation measures are required.	Less than Significant
<p>Cumulative Impact UTIL-1</p> <p>Implementation of the proposed project in conjunction with other past, present and reasonably foreseeable development in Sacramento could generate a cumulative demand for new or expanded utilities in the region, the construction of which could result in significant environmental impacts, but the project's contribution would not be cumulatively considerable.</p>	Less than Significant	No project-level mitigation measures are required.	Less than Significant

**Table 2.0-2
Summary Comparison of Project Alternatives**

Resource Topic	Proposed Project	Alternative 1 No Project	Alternative 2 Reduced Project
Aesthetics	LTS	No Impact	Reduced
Air Quality – Construction	LTS	No Impact	Reduced
Air Quality – Operational	LTS	No Impact	Comparable
Biological Resources	LTS	No Impact	Comparable
Cultural Resources	LTS	No Impact	Comparable
Geology & Soils	LTS	No Impact	Comparable
Greenhouse Gas Emissions	LTS	No Impact	Comparable
Hazards and Hazardous Materials	LTS	No Impact	Comparable
Hydrology & Water Quality	LTS	No Impact	Comparable
Land Use	NI	No Impact	Comparable
Noise – Construction	SU	No Impact	Reduced, but still SU
Noise – Operational	LTS	No Impact	Comparable
Population and Housing	NI	No Impact	No Impact
Public Services & Recreation	LTS	No Impact	Comparable
Traffic – Construction	LTS	No Impact	Reduced
Traffic Operational	LTS	No Impact	Comparable
Utilities – Water	LTS	No Impact	Comparable
Utilities – Wastewater	LTS	No Impact	Comparable
Utilities – Solid Waste	LTS	No Impact	Comparable
Utilities – Electricity	LTS	No Impact	Comparable
Utilities – Natural Gas	LTS	No Impact	Comparable
Utilities - Telecommunications	LTS	No Impact	Comparable
<p><i>KEY</i> <i>LTS Less than significant impact</i> <i>NI No Impact</i> <i>SU Significant and unavoidable</i></p>			

3.0 PROJECT DESCRIPTION

3.1 INTRODUCTION

The University of California system (UC system) consists of 10 campuses, five of which support health sciences programs that include teaching hospital facilities affiliated with medical schools: San Francisco, San Diego, Irvine, Los Angeles, and Davis. At the Davis Campus, the affiliation between the teaching hospital and the medical school is a single organization called the UC Davis Health System (UCDHS). The UCDHS includes UC Davis Medical Center, UC Davis School of Medicine, Betty Irene Moore School of Nursing, and UC Davis Medical Group.

The University of California Board of Regents (The Regents) acquired the Sacramento County Hospital in 1973 to develop the UC Davis Medical Center Sacramento campus located approximately 17 miles east of the UC Davis campus. In 1978, the facility was officially named by The Regents as the University of California, Davis Medical Center (UCDMC). At that time, the existing hospital facility had several seismically deficient buildings and did not have enough space to meet the medical center's patient care, educational, and research responsibilities. Since then, major construction and remodeling projects have transformed the medical center to a state-of-the-art 613-licensed-bed regional health care center that serves as the principal clinical teaching and research site for the UC Davis School of Medicine. The Medical Center is now known as the UC Davis Sacramento campus.

The proposed series of actions analyzed in this EIR as the Hospital Seismic Demolition and Office Replacement project (project or proposed project) include the construction of a new office building on the Sacramento campus to allow for the relocation of critical operational support programs from two seismically deficient structures, the North/South Wing of the UCDHS Main Hospital (Main Hospital) and the Housestaff Building, and the subsequent demolition of these structures. This project is part of a series of actions that must be completed by 2020 to address seismic safety mandates required by the State of California Office of Statewide Health Planning and Development (OSHPD).

3.2 PROJECT LOCATION AND SURROUNDING LAND USES

The approximately 142-acre UC Davis Sacramento campus is located in the City of Sacramento, approximately 2.5 miles southeast of downtown Sacramento, 17 miles east of the UC Davis main campus, and 90 miles northeast of San Francisco (see **Figure 3.0-1, Sacramento Campus Regional Location Map**). The Sacramento campus is bound by V Street on the north, Stockton Boulevard to the west, Broadway to the south, and a residential neighborhood to the east (see **Figure 3.0-2, Existing UC Davis Sacramento Campus**).

The Main Hospital and clinical facilities located on the Sacramento campus provide acute care and general care services to residents of the County of Sacramento. As depicted in **Figure 3.0-2, Existing UC Davis Sacramento Campus**, the existing campus is organized into four general land use zones or functional areas, consisting of (1) Hospital, (2) Ambulatory Care, (3) Education and Research, and (4) Support Services.

Hospital Zone – includes the Main Hospital, Cypress Building, Housestaff Building, Medical Records, Patient Support Services, Pathology Support Building, and University Police Building.

Ambulatory Care Zone – includes the Lawrence J. Ellison Ambulatory Care Center, Cancer Center, Medical Investigation of Neurodevelopmental Disorders (M.I.N.D.) Institute, M.I.N.D. Institute Wet Lab, Imaging Research Center, Same Day Surgery Center, Ronald McDonald House, and Kiwanis House.

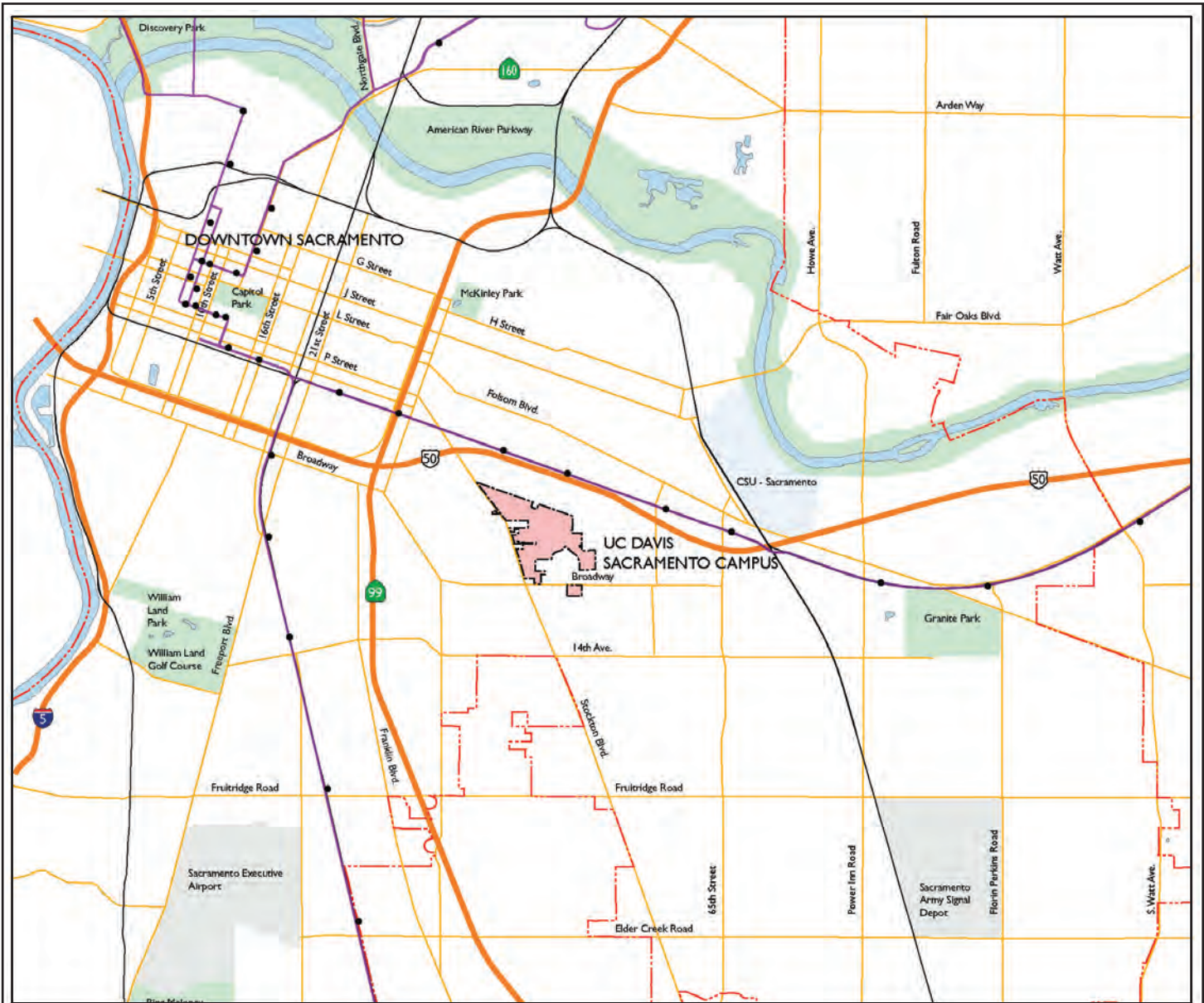
Education and Research Zone – includes the Education Building, and Research Buildings I, II, and III.

Administrative and Support Services Zone – includes the Central Plant, Facilities Support Services Building, and Fleet Services Facility.








Land uses surrounding the campus site include local and regional commercial uses, a low-density single-family residential neighborhood, and higher-density mixed single- and multi-family residential neighborhoods. Stockton Boulevard, along the western boundary of the campus, is lined mostly with one- to three-story office buildings and a small amount of retail. A Shriners Hospital is located on Stockton Boulevard just south of X Street across from the Main Hospital. The ABMCO building and Abrego Partners building are located to west of the campus on Stockton Boulevard south of 2nd Avenue.

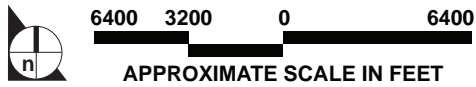
The Elmhurst neighborhood to the north and east of the campus is a residential neighborhood consisting primarily of single-family homes. To the west (west of commercial business buildings along Stockton Boulevard) is the North Oak Park neighborhood, also residential, with a mix of single- and multi-family residences. These neighborhoods can be characterized as pre-World War II traditional neighborhoods. The Fairgrounds neighborhood to the south and southeast of the campus is also a residential area that consists predominantly of multi-family residential uses.

Several public institutions and offices are located between the southern edge of the campus and Broadway. The Marian Anderson School, Sacramento County Department of Social Services, State Department of Justice and Law Enforcement and State Employment Development Offices are located along 49th and 50th Streets, and north of Broadway. The Department of Motor Vehicles and Sacramento County Coroner and Crime Lab Building are located south of Broadway and west of the Broadway Office Building. These public office uses continue south of Broadway as well.



LEGEND

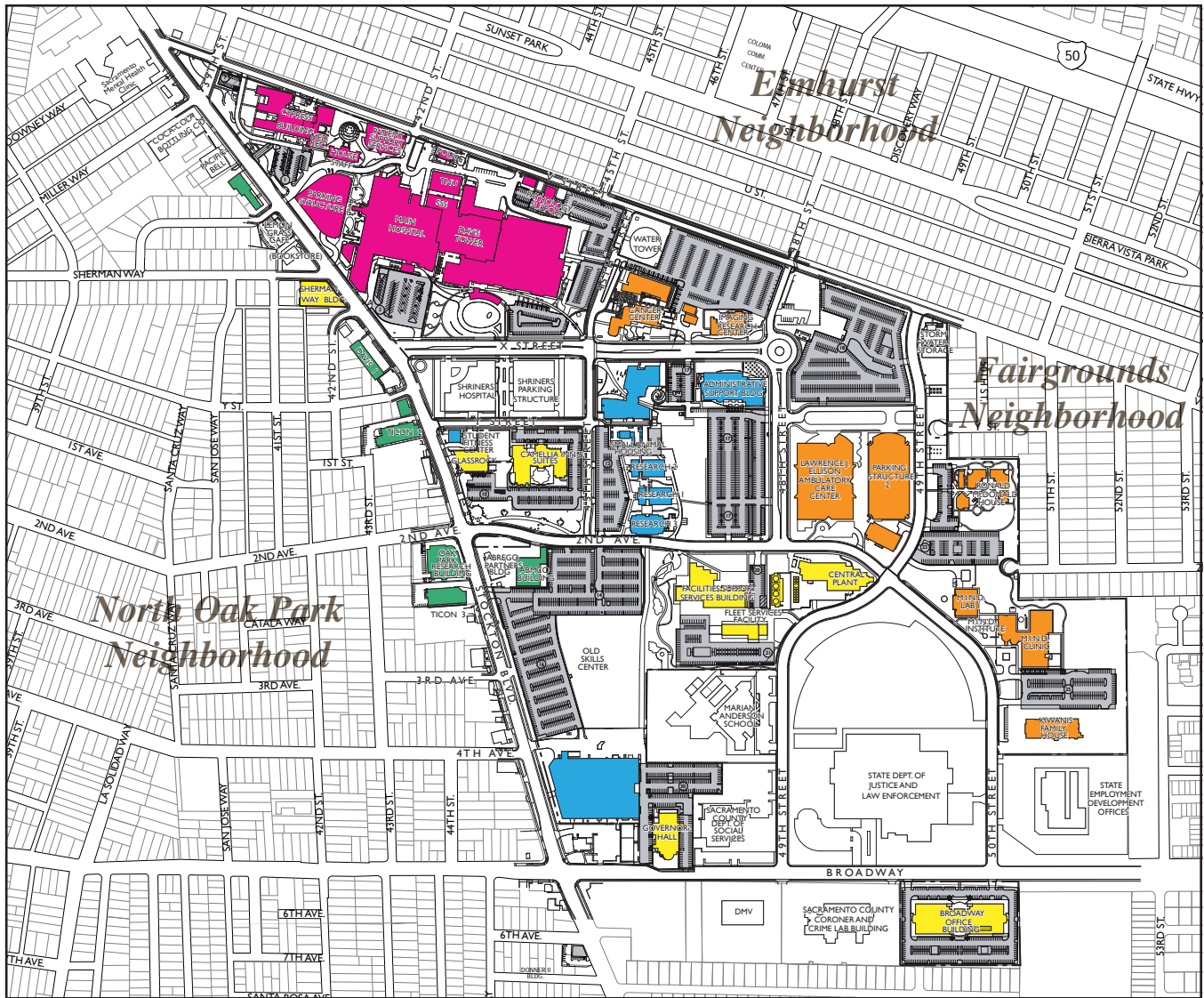
-  UC Davis Sacramento Campus
-  City Boundary
-  Light Rail
-  Light Rail Stations
-  Light Rail Stations
-  Freeway
-  Arterial



SOURCE: University of California - Davis Sacramento Campus LRDP - June 2010

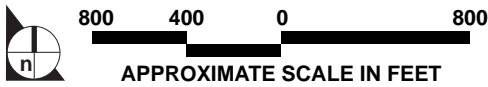
FIGURE **3.0-1**

Sacramento Campus Regional Location Map



LEGEND

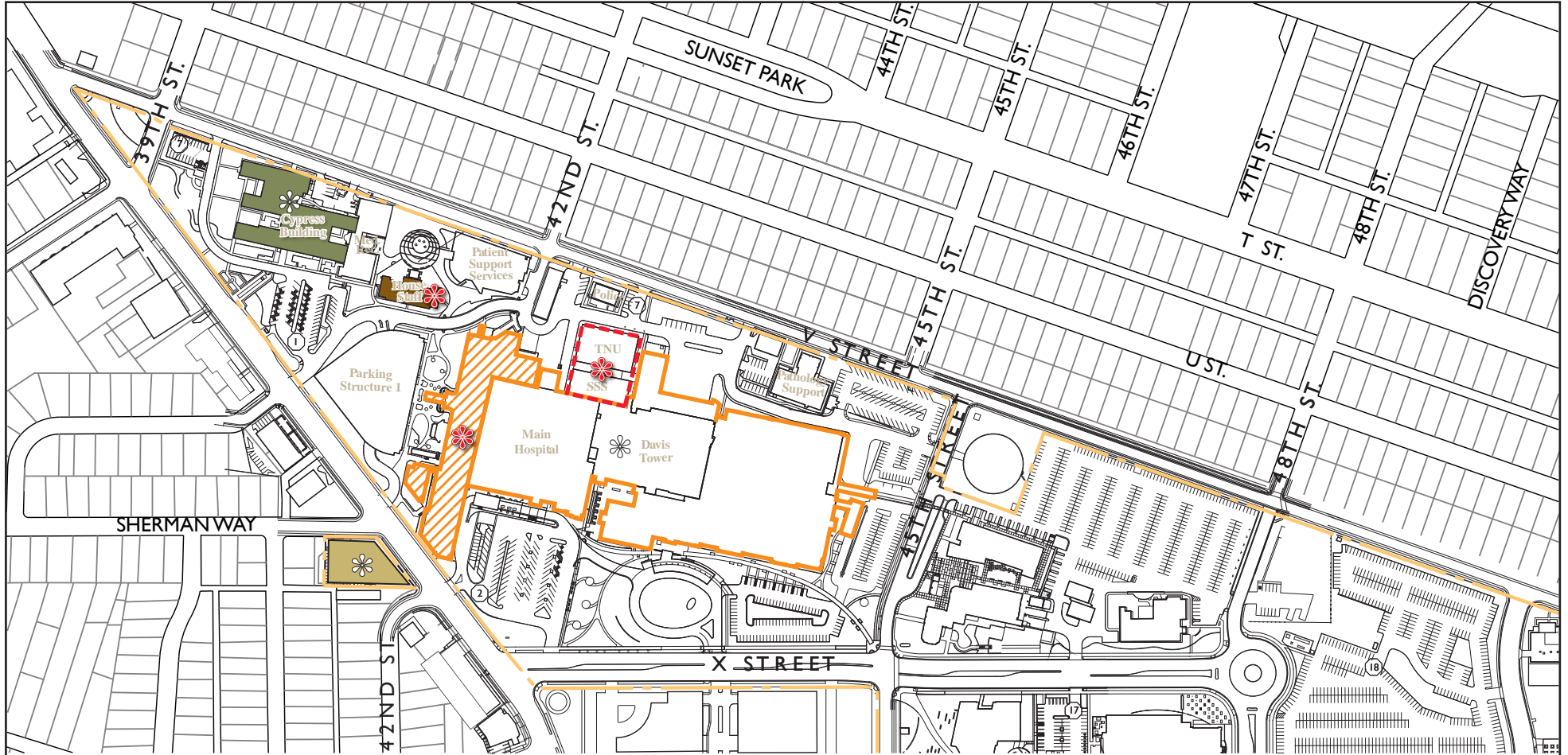
- Buildings Leased by UCDHS
- Hospital
- Ambulatory Care
- Education & Research
- Support Services
- Parking












SOURCE: University of California - Davis Sacramento Campus LRDP - June 2010

FIGURE 3.0-2

Existing UC Davis Sacramento Campus



LEGEND

- | | | | | | |
|---|-------------------------------------|---|---|---|--|
|  | UC Davis Sacramento Campus Boundary |  | Proposed North Addition-Office Building |  | House Staff Building |
|  | Main Hospital Complex |  | Sherman Building |  | Direct Proposed Project Elements |
|  | North/South Wing |  | Cypress Building |  | Indirect Proposed Project Elements Described in Text |



SOURCE: University of California - Davis Sacramento Campus LRDP - June 2010

FIGURE 3.0-3

Project Site Locations

3.3 PROJECT OVERVIEW

UCDHS proposes to implement the proposed project to improve seismic safety and provide replacement office space at the Sacramento campus. The proposed project includes: (1) the construction of the approximately 130,000 gross square foot (GSF)¹ North Addition Office Building; (2) demolition of the approximately 235,000 GSF North/South Wing of the Main Hospital, and the subsequent ‘re-skinning’ of the remaining hospital structures; and (3) the demolition of the approximately 20,000 GSF Housestaff Building. In total, the project would reduce building area on the Sacramento campus by approximately 125,000 GSF.

The North Addition Office Building would provide replacement office space for staff currently working in the North/South Wing of the Main Hospital, as well as the Cypress and Sherman buildings located on Stockton Boulevard adjacent to the campus. The proposed building would be a six-story building located along the northern edge of the Sacramento campus between V Street and the Main Hospital Complex just north of the East Wing and the Davis Tower. The project site and proposed building location for the North Addition Office Building are shown on **Figure 3.0-3, Project Site Locations**.

The North/South Wing would be demolished as part of the proposed project in order to remove seismically deficient facilities. With removal of the North/South Wing of the Main Hospital, the remaining western edge of the hospital would have no exterior wall. A new façade on the western face of the hospital would be constructed to provide a finished exterior to the remaining building. Upon removal of the North/South Wing, the site of the former structure would be redeveloped and landscaped to create a pedestrian plaza area.

The Housestaff Building currently provides space for clinical pastoral services and transplant staff offices. The two-story building is seismically deficient and would be demolished as part of the project.

Project construction and demolition are expected to take place from 2016 through 2022 with construction access provided from Stockton Boulevard via Colonial Way; no construction site access or traffic would be allowed on V Street.

¹ GSF = Gross Square Feet - The sum of all areas on all floors of a building included within the outside faces of its exterior walls, including all vertical penetration areas, for circulation and shaft areas that connect one floor to another.

ASF = Assignable Square Feet - The sum of all areas on all floors of a building assigned to, or available for assignment to, an occupant or specific use (classrooms, labs, offices, study facilities, special use, general use, support, health care, residential, and unclassified – that are used to accomplish the institution’s mission).

3.4 PROJECT NEED AND OBJECTIVES

Need

The proposed project would provide modern replacement space for seismically deficient and outdated facilities on the Sacramento campus.

Following the deadly 1994 Northridge earthquake, hospital acute care facilities in California are subject to seismic safety mandates outlined in the State of California Senate Bill (SB) 1953. Compliance with SB 1953 has been an integral component of UCDHS facility planning, and significant progress toward meeting state seismic mandates has occurred in recent years. The construction of the Davis Tower (May 1999), and the subsequent build-out of its six floors of shelled space (1999-2009) for inpatient beds, as well as the completion of the Surgery and Emergency Services Pavilion (October 2010), has made way for virtually all of UCDHS's inpatient beds and critical systems to be located in facilities that are seismically compliant. Over the past four years, patient care spaces have been relocated to the Surgery and Emergency Services Pavilion Project, including the Operating Room Suite, Emergency Department, Clinical Lab, Radiology, and Dietary Services.

The approximately 235,000 GSF North/South Wing of the Main Hospital complex is a "Structural Performance Category 1" structure per OSHPD standards. To comply with state seismic mandates and maintain hospital licensure, the UCDHS intends to vacate and disconnect the North/South Wing from the adjoining Main Hospital complex by the 2020 deadline.

At present, the North/South Wing is home to two acute care units (Apheresis and Dialysis unit, and Children's Surgery Center and Hospitalists), some support units (such as Environmental Services, Child Life Program, and Gift Shop Storage), and several key administrative units which directly serve the Main Hospital complex. The key administrative units located within the North/South Wing are:

- Hospital Administration and Operations
- Heart and Vascular Center
- Patient Care Services
- Pharmacy Operations
- Physical Medicine & Rehabilitation Therapies
- Performance Excellence
- Neurology

- Infection Prevention
- Pastoral Services (limited to only a portion of this program, with most of the space located in the Housestaff Building)

To house the displaced hospital administrative units listed above, UCDHS is proposing to construct the North Addition Office Building. The remaining Apheresis and Dialysis units, and Children's Surgery Center and Hospitalists have approved projects for relocation to other areas of the Main Hospital complex (University Tower 1st Floor and Surgery and Emergency Services Pavilion, respectively). The new building would also provide space for the relocation of programs currently located in the Cypress Building and the off campus Sherman Building.

Another nearby building on the Sacramento campus, the Housestaff Building, which currently provides space for clinical pastoral services and transplant staff offices, is also seismically deficient. The two-story building was constructed in 1916 and has a seismic safety rating of very poor. Programs located in that building would be located to the Cypress and Sherman Buildings and the Housestaff Building would be demolished as part of the project.

Project Objectives

The overall project objectives are to:

- Provide replacement space for offices and support functions in the seismically deficient North/South Wing.
- Promote synergy and consolidate departments focused on enhancing quality and the patient experience.
- Foster highest and best use of space adjacent to the hospital.
- Provide modest amount of growth space for academic offices.
- Replace the hospital command center displaced by the Tower 1 renovation project.
- Achieve UC sustainability goals for energy performance.
- Create high quality office environment at reasonable cost.
- Provide office space as non-OSHPD space separate from hospital building.
- Complement the aesthetic and operational aspects of the existing hospital buildings.
- Respect the residential neighborhood to the north.
- Create adjacent outdoor plaza/garden space.

3.5 PROJECT ELEMENTS

Project Building Space Plan and Population

As noted above, the project is composed of three components: construction and occupancy of the North Addition Office Building, demolition of the North/South Wing, and the demolition of the Housestaff Building. **Table 3.0-1, Proposed Hospital Seismic Demolition and Office Replacement Project Space Plan** and **Table 3.0-2, Secondary Space Effects, Programs Relocating from the Housestaff Building** provide a summary of the space to be vacated and the programs that would be relocated into the new building. In total, as shown in **Table 3.0-3, Proposed Hospital Seismic Demolition and Office Replacement Project Building Square Footage**, the proposed project would reduce building space on the Sacramento campus by approximately 125,000 GSF.

The proposed new office building would house approximately 571 existing staff currently located in the North/South Wing, the Cypress Building, and the Sherman Building. Furthermore, the building includes only a nominal amount of building space (4,000 ASF) to accommodate growth in the relocated programs. As a result, the number of staff on the Sacramento campus is not anticipated to increase as a result of project implementation.

**Table 3.0-1
Proposed Hospital Seismic Demolition and Office Replacement Project Space Plan**

Program (Current Staff Count)	Current Location	ASF	Reason For Relocation	Future Location	Estimated New ASF
Auditorium Conference Functions (N/A)	North/South Wing	6,168	Seismic	North Addition Office Building	11,044
Hospital Admin and Operations (11)	North/South Wing	2,604	Seismic	North Addition Office Building	3,650
Heart and Vascular (72)	North/South Wing	7,677	Seismic	North Addition Office Building	6,011
Performance Excellence (12)	North/South Wing	651	Seismic	North Addition Office Building	1,006
Neurology (25)	North/South Wing	1,663	Seismic	North Addition Office Building	2,196
Infection Prevention (12)	North/South Wing	2,119	Seismic	North Addition Office Building	1,414
Patient Care Services (56)	North/South Wing	6,979	Seismic	North Addition Office Building	7,165
Pharmacy Operations (67)	North/South Wing	5,445	Seismic	North Addition Office Building	4,822

3.0 Project Description

PM&R Therapies (85)	North/South Wing	3,005	Seismic	North Addition Office Building	4,104
Trauma (44)	North/South Wing	6,456	Seismic	North Addition Office Building	6,587
Dieticians (31)	North/South Wing	1,934	Seismic	North Addition Office Building	1,889
Surgery (101)	Cypress	9,354	Program adjacency which frees up space to solve Housestaff Seismic Issue and Transplant adjacency issue	North Addition Office Building	9,815
Clinical Affairs (55)	Sherman	5,096	Program adjacency which frees up space to solve Housestaff Seismic Issue and Pastoral Services adjacency issue	North Addition Office Building	4,853
Growth Factor (N/A)	N/A	N/A	For possible program growth during construction	North Addition Office Building	4,000
Staff Total (571)		Total Current ASF 59,151			Total New ASF 68,556

Source: UC Davis Environmental Stewardship and Sustainability Department, August 2015

Table 3.0-2
Secondary Space Effects, Programs Relocating from the Housestaff Building

Program (Current Staff Count)	Current Location	ASF	Reason For Relocation	Future Location	Estimated New ASF
Clinical Pastoral (8)	Housestaff & North South Wing	538	Vacate seismically deficient space and house program to its parent department in Sherman Bldg.	Sherman	1,500
Transplant (48)	Housestaff	6,821	Vacate seismically deficient space and brings program to its clinic space in Cypress Bldg.	Cypress	9,815
Staff Total (56)		Total Current ASF 7,359			Total New ASF 11,315

Source: UC Davis Environmental Stewardship and Sustainability Department, August 2015

Table 3.0-3
Proposed Hospital Seismic Demolition and Office Replacement Project Building Square Footage

Building	Existing (GSF)	Proposed (GSF)	Change
North/South Wing	235,000	0	(235,000)
Housestaff Building	20,000	0	(20,000)
North Addition Office Building	0	130,000	130,000
			(125,000)

Source: UC Davis Environmental Stewardship and Sustainability Department, August 2015

North Addition Office Building Construction

The North Addition Office Building would be constructed north of the Main Hospital on the site currently occupied by an approximately 30,000 square foot single-story temporary building used as the Children’s Surgery Center and the Trauma Nursing Unit that will be demolished under a separate project in late 2015. The site is bounded on the south by the continuous north face of the Main Hospital, on the east by loading docks and on the west by an asphalt service driveway for the hospital. The project site and proposed location for the North Addition Office Building are shown on **Figure 3.0-3**. The building site consists entirely of impervious surfaces, including asphalt and concrete paving at the present time.

The new building would be a six-story building that would provide 130,000 GSF of building space. The building would have a footprint of approximately 21,000 square feet (SF), with the remaining site area redeveloped as an entry plaza and courtyard for the south side of the building and enhanced pedestrian circulation around the perimeter of the building. Refer to **Figure 3.0-4, North Addition Office Building Project Site Detail**, and **Figure 3.0-5, Project Site Context** for further information regarding site configuration. Following project construction, the site’s northern edge would be defined by the existing University Police Building, a reconfigured service road, a small surface parking area with 12 spaces and the related landscaped buffer that would be constructed as part of the proposed project.

The new building would be linked to the Main Hospital by a single-story passage to an existing east/west corridor located in the Davis Tower. The building would be connected to the existing utilities infrastructure serving the overall Sacramento campus; no portions of the new construction would be required to meet OSHPD regulations, other than the areas of construction directly connecting to the Main Hospital building (Davis Tower). In addition, the proposed North Addition Office Building would be

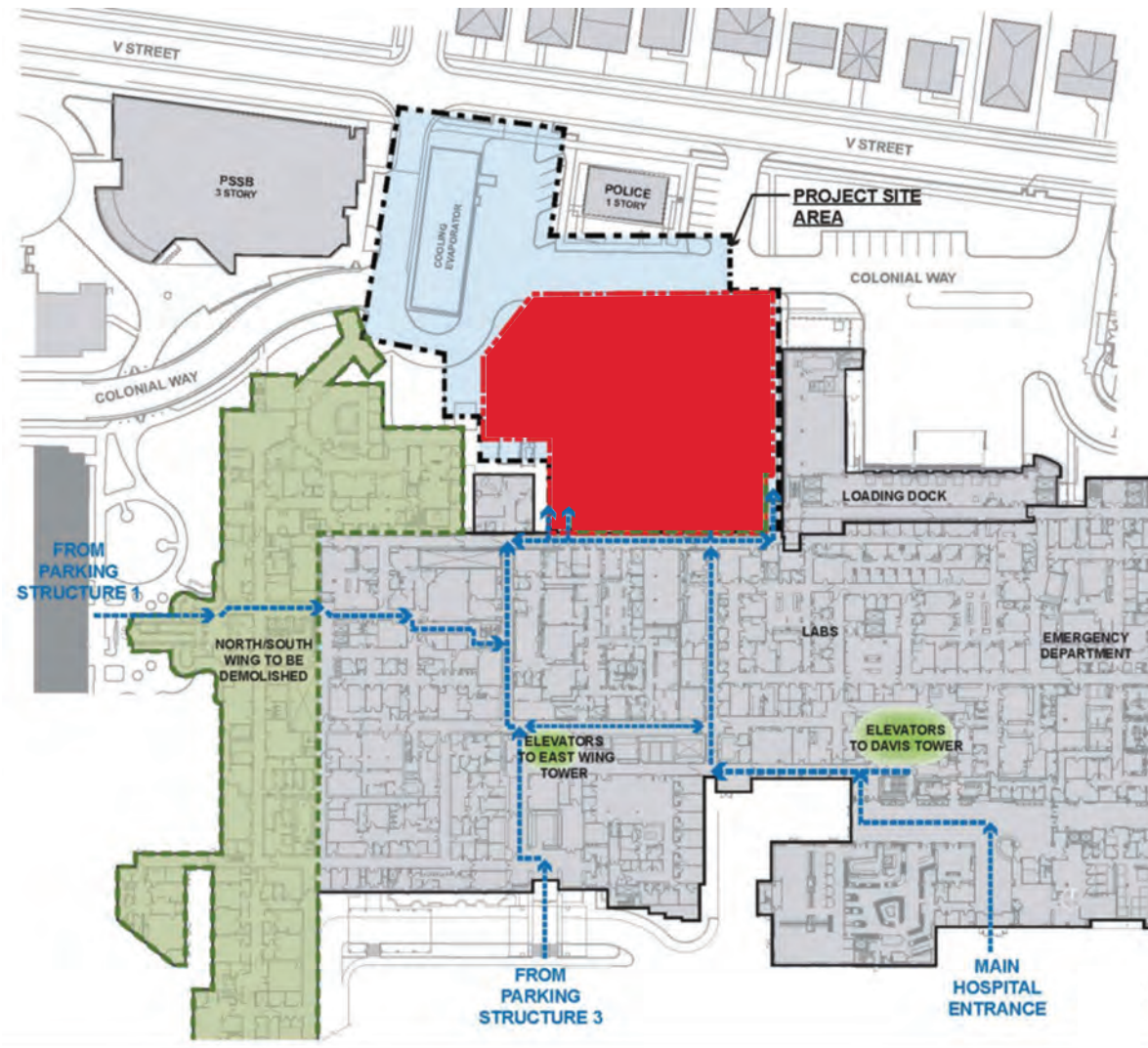
constructed to meet all UC sustainability goals and would seek a UC equivalent LEED® Gold Certification or better.

The building would include office and departmental space along with support spaces such as conference rooms, restrooms, storage space, pharmacy operations space, auditorium/conference space, administrative space, and space for the emergency operations center.

The construction contract for the proposed project would be for a design/build project. However, in order to ensure that the new building meets the programmatic needs of the future occupants and the sustainability policies and goals of the University of California, as well as respect its neighboring uses, UCDHS has developed a detailed set of design criteria for both the interior and exterior of the building. Key exterior design criteria required by UCDHS include, but are not limited to the following:

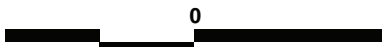
- respect the Campus Design Criteria and precedents;
- an elegant design fitting for Administration, but not an architectural showpiece;
- respect the neighbor's desire for privacy - create a screen or filter on the north façade;
- maximize north light and glazing;
- minimize solar heat gain;
- protect southern glazing from direct sun;
- protect east and west glazing from direct sun;
- create a façade which harmonizes the north face of the Medical Center;
- create a clear sense of entry and arrival; and
- reduce glare to other buildings.

Figure 3.0-6 through **Figure 3.0-13** provide conceptual site plans, renderings and building sections for the North Addition Office Building. While these plans do not represent the final design for the proposed project, given the design criteria which must be followed in the upcoming final design process, it is anticipated that the design of the new building will not significantly depart from the architectural style of these plans or from the architectural styles of nearby buildings at the medical center.



LEGEND

- North Addition Footprint
- North Addition Project Boundaries
- North/South Wing Demolition (partially shown)



NOT TO SCALE

SOURCE: University of California - Davis Sacramento Campus LRDP - June 2010

FIGURE 3.0-4

North Addition Office Building Project Site Detail



SOURCE: University of California - Davis Sacramento Campus LRDP - June 2010

FIGURE 3.0-5

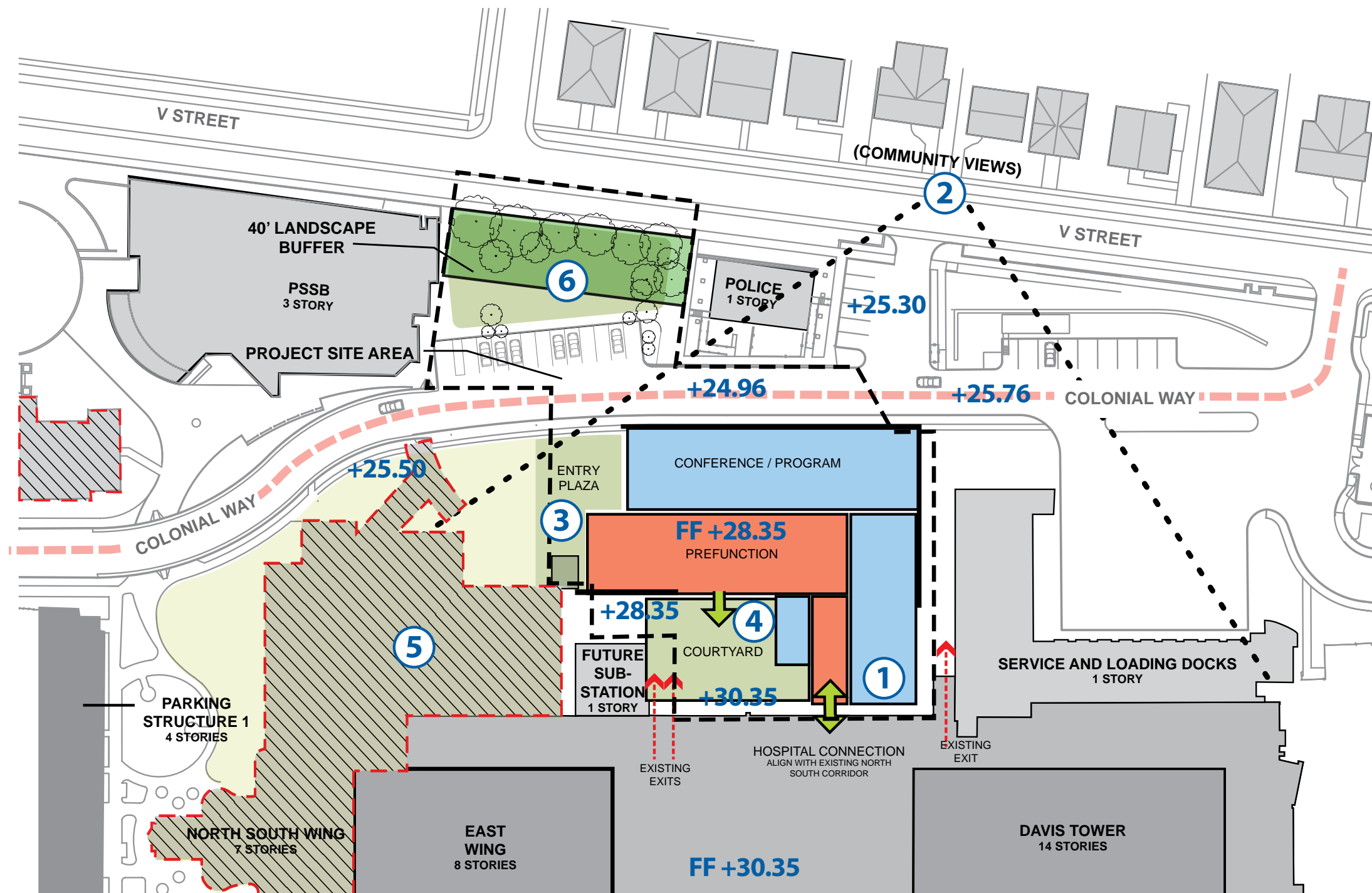
Project Site Context

First Floor Diagram

The First Floor Diagram demonstrates program organization relative to adjacent existing conditions, notably: Existing Hospital Connection; Parking Structure 1 - and staff entrance to the North Addition; Loading/ Service Dock

- ① Emphasize entry, provide gathering space
- ② Respect the view from the community to the building
- ③ Enhance staff entrance from parking structure. Emphasize entry. Provide gathering space.
- ④ Connect the entry and conferencing spaces with nature and courtyard.
- ⑤ Buildings to be removed / Future green space
- ⑥ Revise parking and landscape buffer for adjacent neighbors

+00.00 Elevation Above Sea level

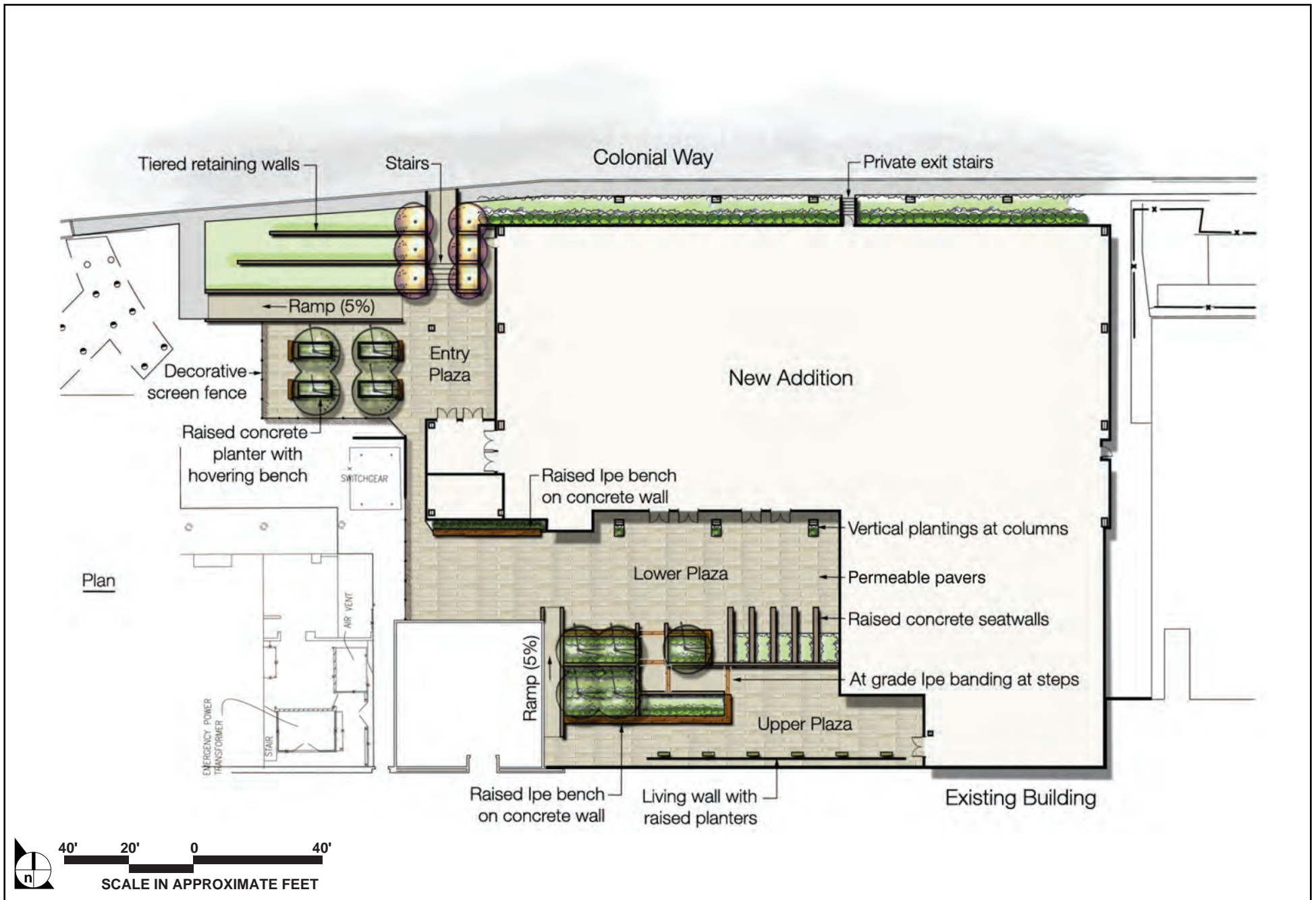


NOT TO SCALE

SOURCE: gkk works, 8/10/15.

FIGURE 3.0-6

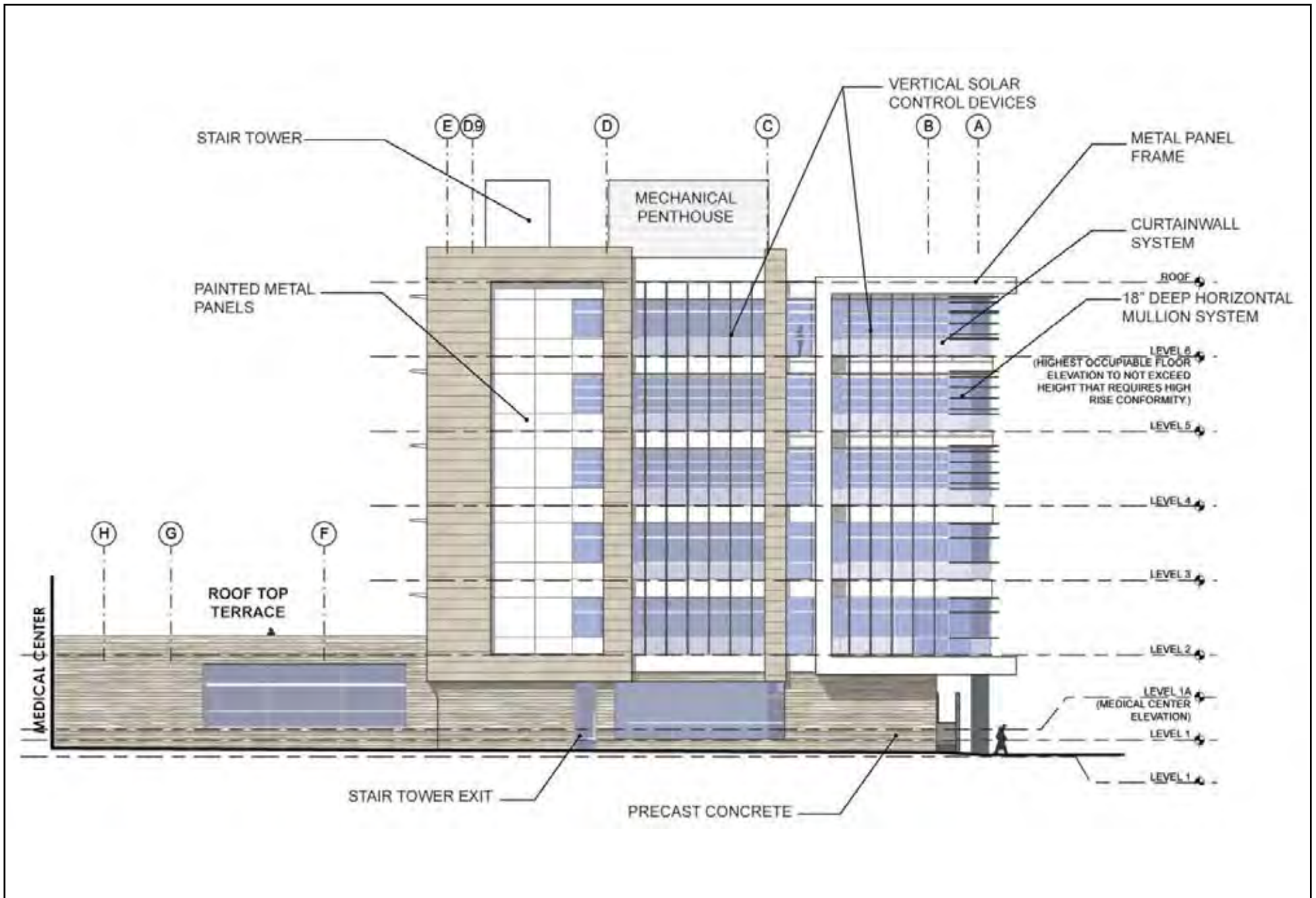
North Addition Office Building Conceptual Architectural Site Plan



SOURCE: gkk works, 8/10/15.

FIGURE 3.0-7

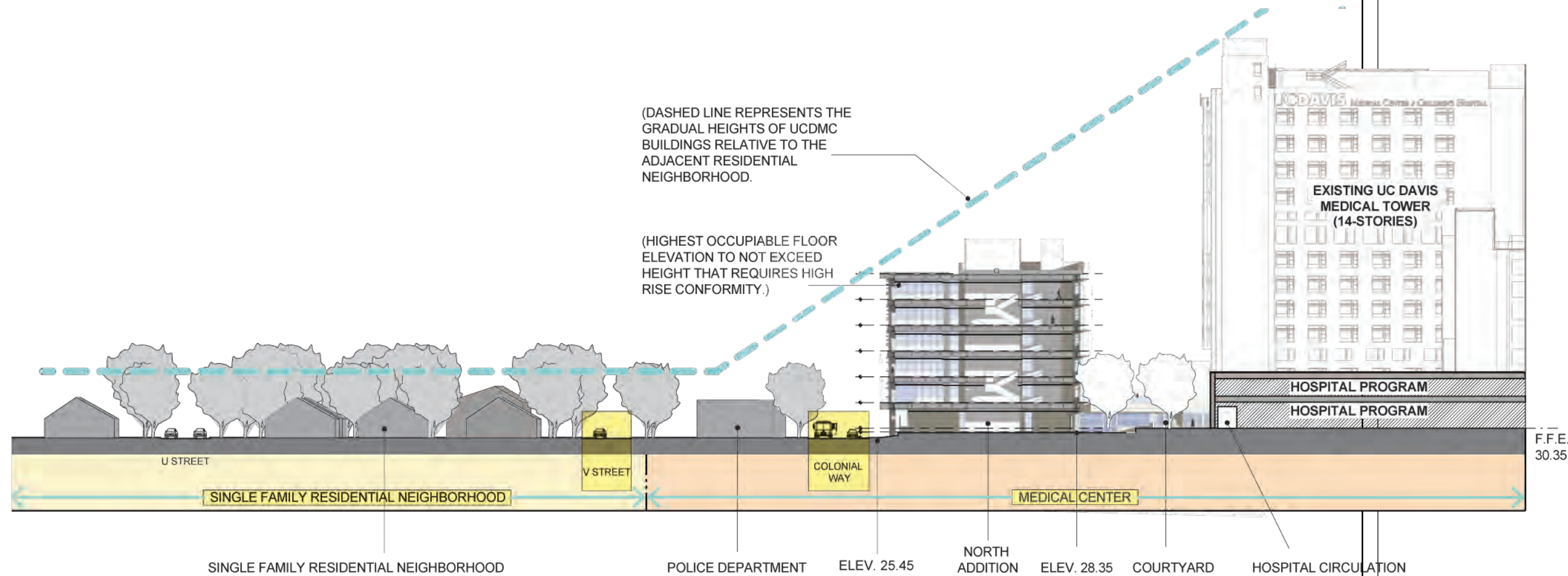
North Addition Office Building Conceptual Landscape Plan



SOURCE: gkk works, 8/10/15.

FIGURE 3.0-8

North Addition Office Building Conceptual View of East Elevation



Site Section

The site section demonstrates scale and sensitive positioning of the North Addition relative to adjacent single-family residences and the existing 14-story Hospital Davis Tower.



SOURCE: gkk works, 8/10/15.

FIGURE 3.0-9

North Addition Office Building Site Section Plan



SOURCE: gkk works, 8/10/15.

FIGURE 3.0-10

North Addition Office Building Conceptual View of North Façade



SOURCE: gkk works, 8/10/15.

FIGURE 3.0-11

North Addition Office Building Conceptual View of Northeast Corner

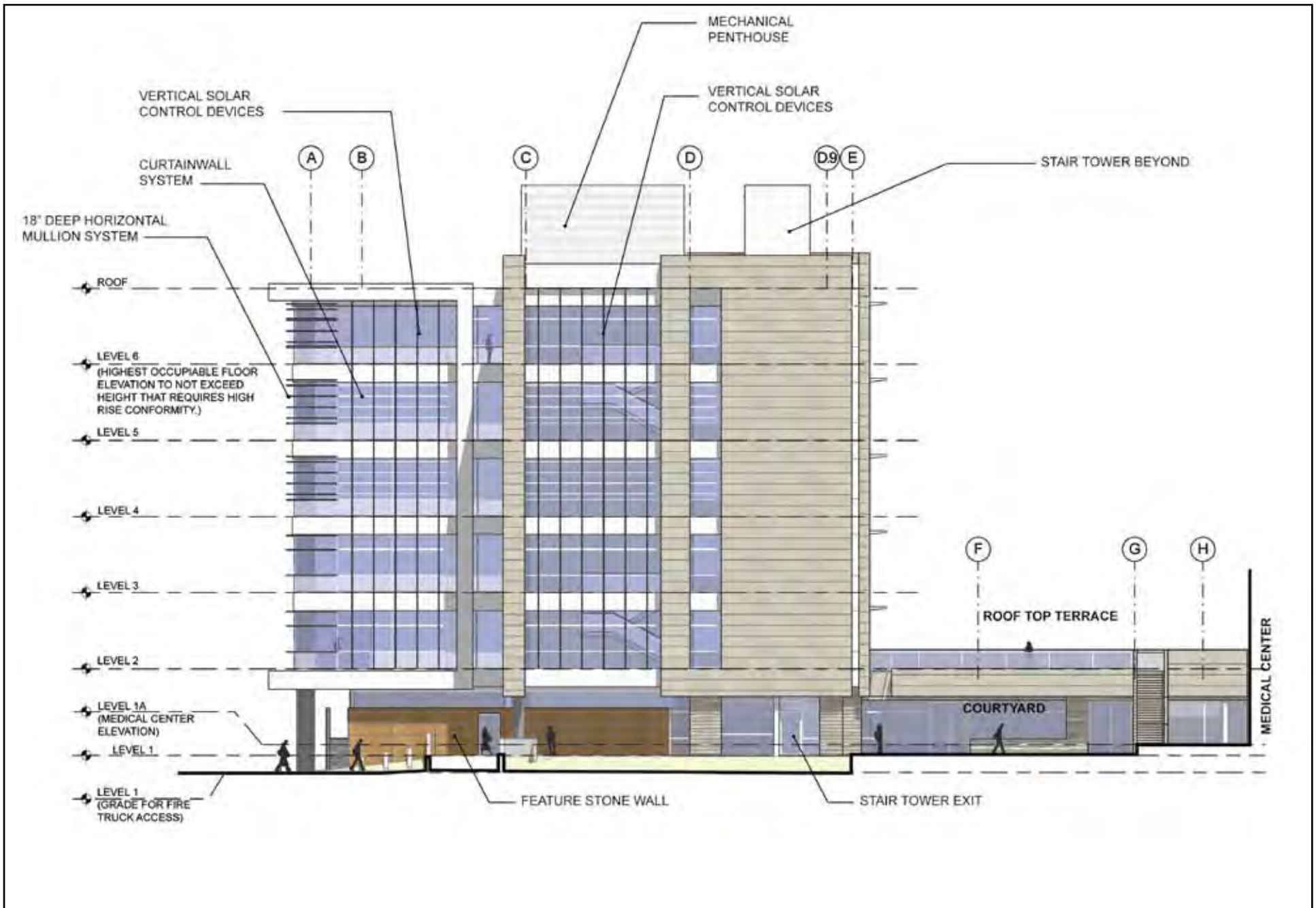


SOURCE: gkk works, 8/10/15.

FIGURE 3.0-12

North Addition Office Building Conceptual View of Northwest Corner





SOURCE: gkk works, 8/10/15.

FIGURE 3.0-13

North Addition Office Building Conceptual View of West Elevation

Housestaff Building Demolition

The Housestaff Building (approximately 20,000 GSF) is located adjacent to Colonial Way, on an approximately 10,000 sf site. To the east and west of the site are two-story existing administrative support buildings (the Patient Support Services and Cypress Buildings, respectively), Parking Structure 1 (Cypress Building parking) is located across Colonial Way, south of the site, with a landscaped courtyard area located to the north. The location of the Housestaff Building is shown on **Figure 3.0-3**.

As noted above, programs located in Housestaff Building would be located to the Cypress and Sherman Buildings and the building would be demolished as part of the project. Once the building is demolished, the site would be graded and landscaped to provide a pedestrian walkway and shade trees and it would essentially expand and complement the existing plaza north of the project site. However, the Housestaff Building site may be used for construction staging for both the construction of the North Addition Office Building and the North/South Wing demolition and façade reconstruction phases of the project. If this becomes the chosen option, the clinical pastoral services and transplant staff currently occupying the Housestaff Building would be temporarily accommodated in a portion of the Main Hospital or the Sherman Building, pending completion of the North Addition Office Building.

Demolition of the Housestaff Building would include an abatement phase to meet asbestos and lead removal requirements and a demolition phase consisting of building deconstruction and removal by trucks. The site would be fenced and a double-wide gate would be installed at the eastern corner of the property on Colonial Way which would ensure separation from the Parking Garage 1 ingress and egress location. Once fencing and gates were in place, the building and improvements would be demolished. The contractor would bring in a portable motorized crusher and crush all of the concrete on-site; effectively creating an aggregate base type material which would then be used to create a crushed-aggregate base parking lot. Construction trailers, materials staging and contractor parking would all be accommodated on this parking lot for the duration of both the construction of the North Addition Office Building and the North/South Wing demolition and façade reconstruction phase. Following the completion of these phases, the (former Housestaff Building) site would be landscaped to create a pedestrian plaza area.

North/South Wing Demolition

The North/South Wing of the Main Hospital is a six-story building (approximately 235,000 GSF) that is located immediately adjacent to the Parking Structure 1 entrance/exit at Stockton Boulevard to the south, and Colonial Way to the north and is approximately 200 feet from the northern edge of the Sacramento campus, on an approximately 50,000 sf site. The east side of the building is attached to the Main Hospital.

An approximately 75-foot wide landscaped area separates the North/South Wing from Parking Structure 1 to the west. The location of the North/South Wing is shown on **Figure 3.0-3**.

Demolition of the North/South Wing of the Main Hospital would include the following central activities:

- Utility disconnection
- Building decommission and hazardous materials abatement
- Building demolition
- Main Hospital façade reconstruction
- Site restoration and landscaping to create a pedestrian plaza area

Building demolition would take place in seven sequences, the first being “soft demolition,” followed by six sequences of the “hard demolition.” Soft demolition is the internal “finish” stripping of the building carried out by demolition laborers and lightweight motorized equipment. The focus of soft demolition is to remove as much of the waste materials from the building ahead of the structural or hard demolition, which is the systematic deconstruction of a structure by means of heavy equipment. The prime objective of the soft demolition sequence is to segregate and recycle as much material from inside the building as possible, leaving just the structure intact. All waste materials from this sequence would be removed from the site to licensed recycling and landfill centers. The soft demolition sequence is expected to take approximately 30 weeks to complete.

Following the completion of all the soft demolition work, the contractor will install a separation curtain at all floor levels through the existing expansion joints that exist between the North/South Wing and the East Wing of the Main Hospital. This separation curtain can best be described as a chain link fence screen that is installed vertically through the building’s expansion joints. This curtain assures that during the hard demolition phase, no debris would be permitted to reach the East Tower.

The hard demolition of the North/South Wing would be accomplished over approximately 12 weeks in six separate sequences mainly working across the site from south to north. The Ramp Tower and the one-story Surgical Center would be demolished first, followed by the southern end of the Wing. The next sequence would demolish the East Tower connector as well as the 1928 South Annex, followed by demolition of the central portion of the Wing. The final sequences would demolish the northern portion of the Wing and lastly the 1928 North Annex. Refer to **Figure 3.0-14, North/South Wing Demolition Sequence** for an illustration of the sequences.

As the structure is demolished all of the concrete would be separated from the steel and other assorted debris. The recovered steel will be taken to a licensed recycling center, while the other debris will be taken to a licensed landfill center if it cannot be recycled. Load out will be continuous to maximize on-site space and assure the cleanliness of the site. The contractor would bring in a portable motorized crusher and crush all of the concrete on-site; effectively creating an aggregate base type material which will then be used to fill in the hole left by the demolished North/South Wing basement. Overall the proposed project is anticipated to achieve a 75 percent recycle rate to meet the UC equivalent LEED Material and Resources Credit 2.2[©].

With removal of the North/South Wing of the Main Hospital, the remaining western edge of the hospital would have no exterior wall. A new façade on the western face of the hospital would be constructed to provide a finished exterior to the remaining building. In addition, the site of the former structure would be redeveloped and landscaped to create a pedestrian plaza area. Construction of the new façade and the pedestrian plaza is expected to take approximately seven months. **Figure 3.0-15, North/South Wing Rendering - New West Façade** provides a conceptual rendering of the remaining Main Hospital building following the proposed façade reconstruction. As with the renderings provided for the North Addition Office Building, these plans do not represent the final design for the North/South Wing façade reconstruction. However, given the design criteria which must be followed in the upcoming final design process, it is anticipated that the design of the new façade will not significantly depart from the architectural style of these plans or from the architectural styles of nearby buildings at the medical center.

Construction and Demolition Logistics

Staging

Construction staging would take place on site and surface parking lot areas proximate to the North Addition Office Building construction site, on the Housestaff Building site, and/or around the North/South Wing in areas between the existing building and the nearby Parking Structure 1.

Construction Fencing

An additional concern during demolition/construction activities is construction security and safety. As is customary for all construction, temporary construction fencing would be used to not only secure the sites; but also to assure public safety. All fencing would be eight feet tall and have a wind screening covering the entire fence, including all gates and the entire face of Parking Structure 1. The exception to this would be the fencing along the northern edge of the North Addition Office Building site, which would be of plywood, or other solid material, in order to provide a barrier for construction noise attenuation. The fence shown around the demolition sites (**refer to Figure 3.0-16, Demolition Sites Fencing Plan**) would

be installed in two sequences. The first fencing to be installed would be used to contain the site prior to, and during demolition and would include gates at the north end of the site at Colonial Way and the south end of the site where the Parking Structure 1 entrance/exit is at Stockton Boulevard. The second set of fences would be installed as demolition is completed at the northeast and southeast corners of the site.

Construction Traffic

As previously discussed, construction access for all project components would take place from Stockton Avenue with primary access to each site provided by Colonial Way. During certain phases of the North/South Wing demolition, a temporary access point for truck traffic carrying demolition debris may be provided on Stockton Avenue approximately at the location of the Sherman Way T-intersection.

As shown in **Figure 3.0-17, Pedestrian and Vehicular Traffic Construction Wayfinding**, to minimize interruption to the Sacramento campus and surrounding neighborhoods, demolition traffic would be routed one way through the construction zone by entering the area via the southern Stockton Boulevard Parking Structure 1 entrance, proceeding north through the demolition area, turning left at Colonial Way and finally exiting the campus at the intersection of Colonial Way and Stockton Boulevard. No demolition/construction traffic would be routed via V Street. Traffic routes would employ California Department of Transportation (Caltrans) certified flag persons who will flag at the north construction gate, Stockton Boulevard demolition entrance, and the intersection of Stockton Boulevard and Colonial Way for the duration of the project. These flag persons will work also as security to keep the general public and staff out of the demolition site.

Demolition can be a very disruptive activity on any campus. Conditions on the Sacramento campus that could be impacted include major structures in close proximity and/or adjacent to the demolition sites, as well as the need for safe access for staff, patients and visitors to the existing campus buildings. To assure no disruption to campus activities such as deliveries and the needs of emergency services, a Construction Traffic Management Plan (CTMP) would be developed to manage the movement of vehicles and people in a safe and effective manner. The plan would include both vehicular and pedestrian way-finding signage, and route Main Hospital delivery traffic from Stockton Boulevard, east on X Street, then north on 45th Street, through the campus and into the dock at the rear or north of the facility; refer to **Figure 3.0-18**. The CTMP would also include information such as the number and size of trucks per day, expected arrival/departure times, truck circulation patterns, location of truck staging areas, location/amount of construction employee parking, and the proposed use of traffic control/partial street closures on public streets. The overall goal of the CTMP would be to minimize traffic impacts to campus and public streets and maintain a high level of safety for all vehicles and pedestrians.

During the demolition phase, the majority of pedestrians and vehicular traffic would be sent to the south side of Parking Structure 1, once the 1-story surgical center structure on the southern edge of the North/South Wing is demolished, which will create a large safety buffer for the pedestrians. Way-finding signage would also be installed inside Parking Structure 1 directing pedestrian traffic to the north or south sidewalks which would remain intact and outside the demolition site fence. The project would also provide signage along the north and south walks directing pedestrians and vehicles to the main entrance of the Main Hospital.

In order to ensure the safety of the staff, patients and visitors it has been recommended that the eastern third of the roof level of Parking Structure 1 be completely closed to the UCDMC staff and the public until the demolition of the fire exit ramp tower on the western edge of the North/South Wing, proximate to Parking Structure 1 is completed. To further safeguard pedestrian safety, a lighted pedestrian walkway, constructed of tube and clamp scaffolding, fully planked and sealed on top and sides with roofing and plywood would be provided along the east side of the site near the Main Hospital entrance.

Following project construction, all campus roadways, pedestrian walkways, and parking lots/structures would be restored to their pre-construction uses and configurations.

Construction Timeline

Demolition of the Housestaff Building and construction of the North Addition Office Building could occur beginning as early as 2016 and continue through 2018. Upon occupancy of the North Addition Office Building, the North/South Wing of the Main Hospital would begin the staged process of decommissioning, demolition, façade replacement, and site redevelopment as a plaza area with an expected timeline of 2018 through 2022 for project completion. **Table 3.0-4, Proposed Project Construction Sequencing and Traffic Estimates**, provides estimated durations of key activities and estimated daily truck trips.

**Table 3.0-4
Proposed Project Construction Sequencing and Traffic Estimates**

Building	Sequence Description	Estimated Number of Weeks	Approximate Daily Truck Trips (entering and leaving)
North Addition Office Building			
Site Prep and Utilities	Site clearing and utility prep.	20	4
Excavation and Foundation	Foundation excavation, steel placement, concrete pouring	12	4
Vertical Construction	Steel and floor construction, building skin, finishing	64	6
Housestaff Building			
Abatement and Utility Disconnect	Equipment/furnishing removal. Abatement with utility disconnection.	8	4
Demolition	Building demolition and hauling	2	12
Site Stabilization	Provide gravel for contractor staging	1	6
Plaza Reconstruction ¹	Landscape and concrete work	8	3
North/South Wing			
Sequence 1	Interior Demolition and Abatement (Soft Demolition)	30	2
Sequence 2	Structural Demo of Ramp Tower and Surgical Center	2	40
Sequence 3	Structural Demo of Southern end of the Wing	2	38
Sequence 4	Structural Demo of East Tower connector and 1928 South Annex	2	38
Sequence 5	Structural Demo of Central portion of the Wing	2	38
Sequence 6	Structural Demo of Northern portion of the Wing	2	38
Sequence 7	Structural Demo of 1928 North Annex	2	28
Façade Construction	Construction work	26	15
Plaza Reconstruction	Landscape and concrete work	8	3

¹ – It is anticipated that plaza reconstruction at the Housestaff Building and the North/South Wing demolition sites would take place concurrently.

Note: Truck trips per day represent the total entering and leaving trips for each distinct phase. For example, the Sequence 2 demolition would occur over a two week period (10 working days) and is expected to include a total of 200 truck loads. This would average 20 loads departing on an average day and a total of 40 truck trips (20 arrivals of an empty truck and 20 departures with a full truck) for a total of 40 loads in Sequence 2.

Source: UC Davis Environmental Stewardship and Sustainability Department, August 2015.



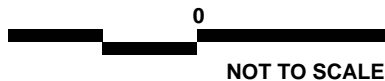
Phase-5 North-South Tower Abatement and Demolition Sequence Plan

DEMOLITION

The approach to the demolition of the North - South tower will require it to be completed in seven sequences. Once The Phase-4 Stair Tower and Corridor Upgrades project, The Phase-4A De-commission East Wing Tie to North South Tower project, the pre planning and mobilization are completed; all of the way finding signage, fencing, covered walkway, and screening will be completed. At this point abatement and demolition can begin. Below is a plan view of how the demolition will proceed:

LEGEND

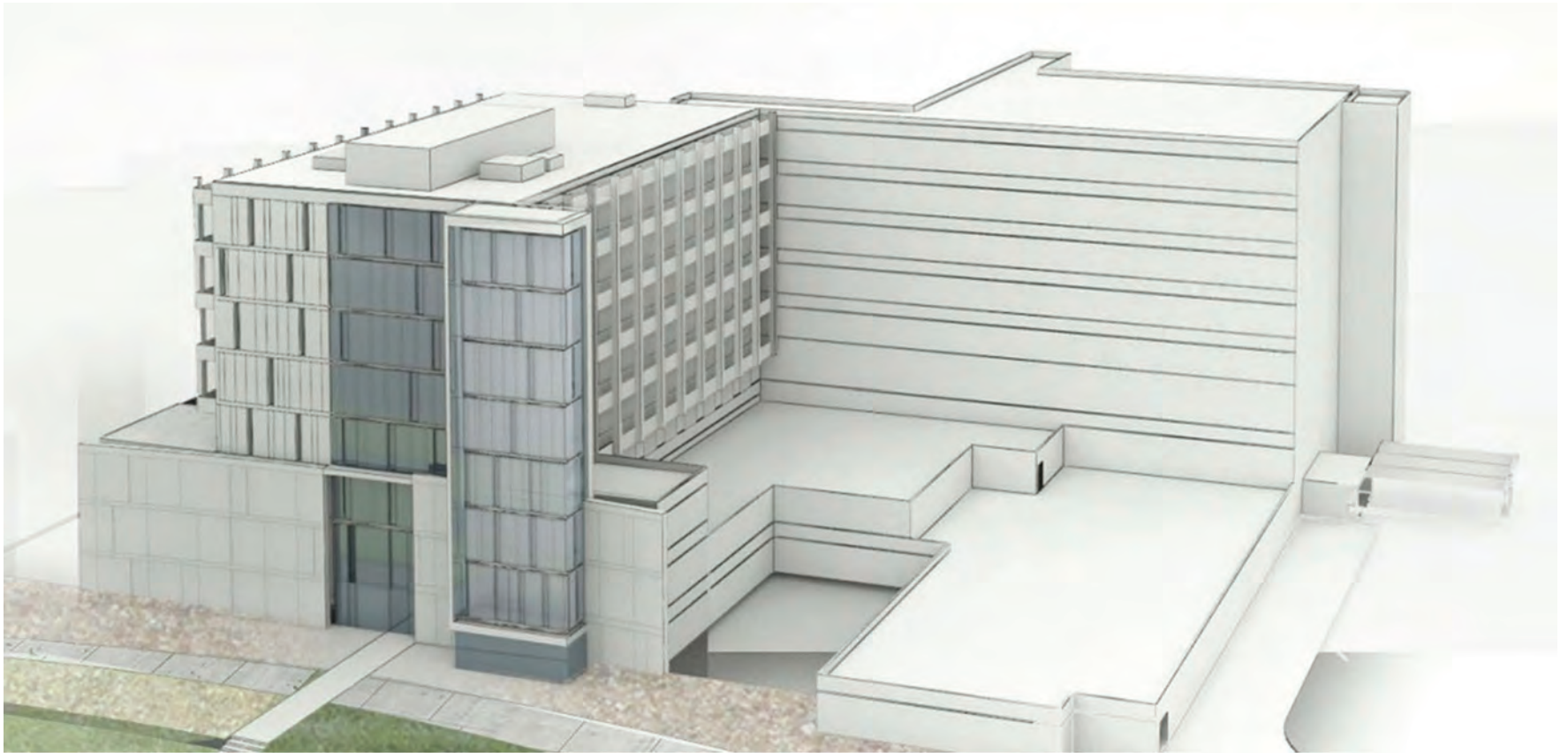
-  Sequence 1
-  Sequence 2
-  Sequence 3
-  Sequence 4
-  Sequence 5
-  Sequence 6
-  Sequence 7



SOURCE: University of California Davis

FIGURE 3.0-14

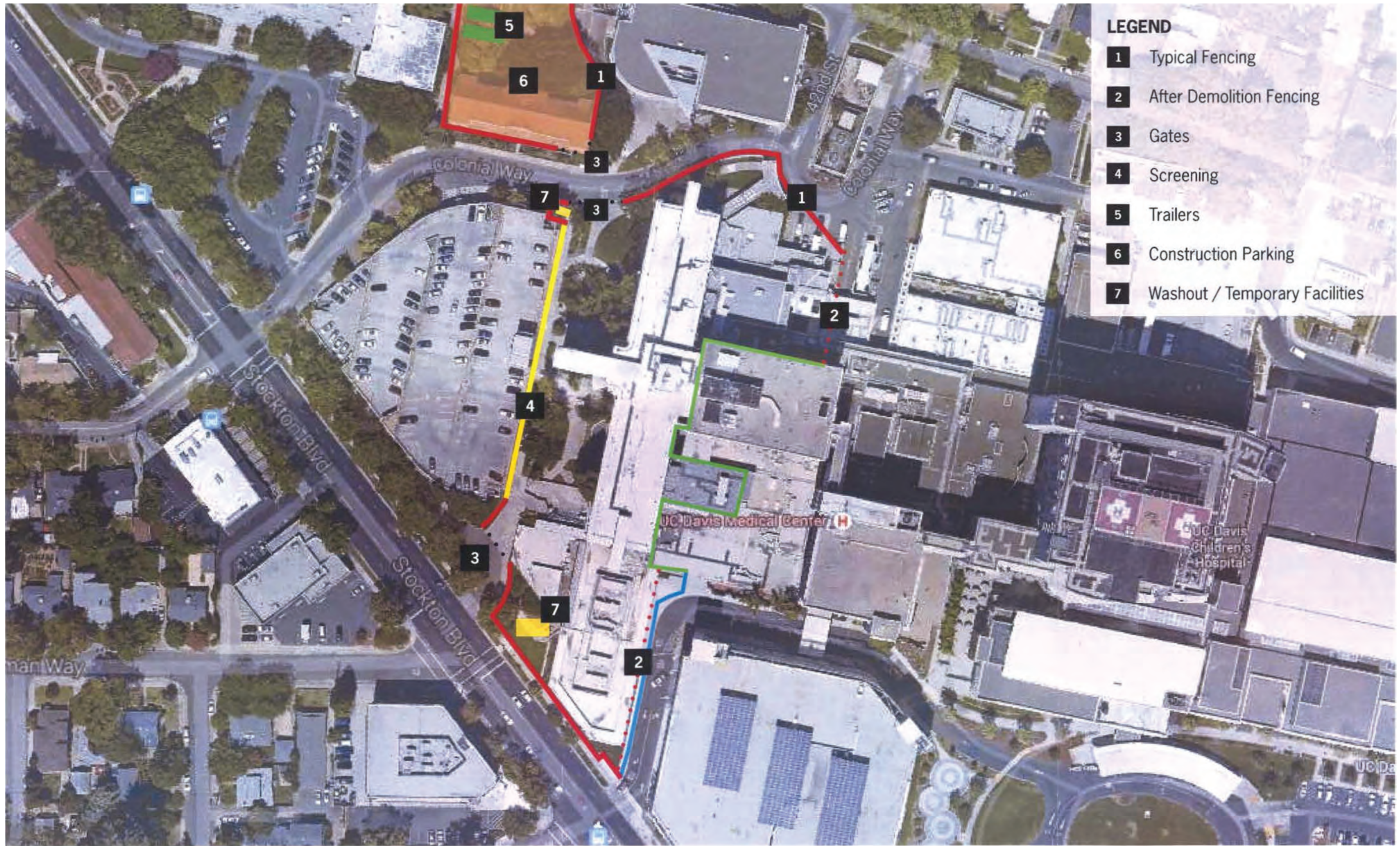
North/South Wing Demolition Sequences



SOURCE: gkk works, 8/10/15.

FIGURE **3.0-15**

North/South Wing Rendering – New West Façade



LEGEND

1	Typical Fencing
2	After Demolition Fencing
3	Gates
4	Screening
5	Trailers
6	Construction Parking
7	Washout / Temporary Facilities

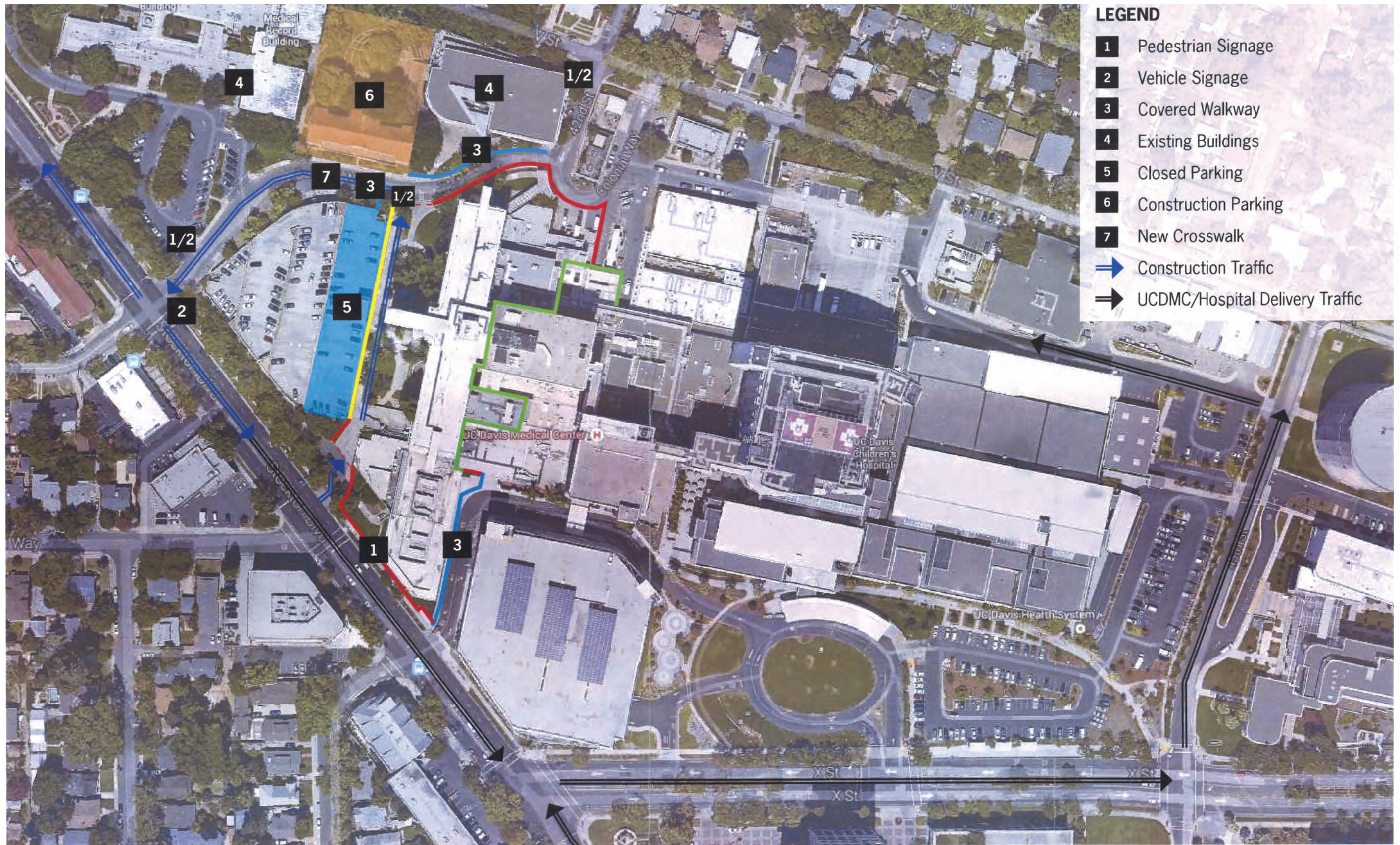



 NOT TO SCALE

SOURCE: McCarthy

FIGURE 3.0-16

Demolition Sites Fencing Plan





 NOT TO SCALE

SOURCE: McCarthy

FIGURE 3.0-17

Pedestrian and Vehicular Traffic Construction Wayfinding

Utilities and Infrastructure

As described in Section 3.12, Volume 1 of the 2010 LRDP EIR from which this EIR is tiered, the campus is currently serviced by the full range of utilities and a well-developed utility infrastructure, augmented by water, wastewater, natural gas, electricity, and some telecommunications services from outside providers.

Potable and Irrigation Water

The City of Sacramento provides potable water to the campus. This water is used for domestic, fire protection, central plant, and irrigation uses, though some of the irrigation demand is met by well water on the campus. Under future 2010 LRDP conditions in the anticipated horizon year of 2025, the annual water demand at the campus was estimated to be about 164.4 million gallons and the maximum flow rate would be 3,967 gallons per minute.

The water service provider, the City of Sacramento, confirmed there is adequate capacity in their large diameter transmission main system surrounding the campus to accommodate the potable water demands associated with campus development under the 2010 LRDP full build-out scenario (Jacobs 2009). Although general system upgrades are not anticipated, depending on the specific requirements of the proposed project, distribution pipes on- and off-campus may require modification or replacement. The Campus will upgrade the on-campus systems as needed to provide adequate flow and pressure to the proposed project.

Regarding consumptive use of water, the new building would be designed and constructed using UC sustainability goals which include water efficiency. Furthermore, as noted above, the new building includes a nominal amount of building space for growth of programs and therefore, the staffing levels on the campus are not expected to increase due to the project. As a result, overall water use on the campus is not expected to increase as a result of the proposed project and could potentially decrease with project implementation.

Sanitary Sewer

Wastewater from the campus is conveyed to the City of Sacramento combined sewer and storm water facilities. It is treated at the Sacramento Regional Wastewater Treatment Plant (SRWTP), which is owned and operated by the Sacramento Regional County Sanitation District (SRCSD). The Central Valley Regional Water Quality Control Board (CVRWQCB) regulates the quality and quantity of effluent discharged from the SRWTP. According to the SRWTP 2020 Master Plan, the treatment plant would be expanded to have a design capacity of 218 mgd ADWF by 2020. The 2010 LRDP EIR estimated that about

0.24 million gallons per day/87.5 million gallons per year of sanitary sewer flows each year would be discharged into the City's combined sewer system at full build-out.

Regarding discharge of wastewater, the new building would be designed and constructed using UC sustainability goals which include water efficiency and therefore the building would result in lower than normal wastewater flows. Furthermore, as noted above, the staffing levels on the campus are not expected to increase due to the project. As a result, overall wastewater discharge from the campus is not expected to increase as a result of the proposed project and could potentially decrease with project implementation.

Storm Water

As stated in the 2010 LRDP EIR, the existing campus land area consists of approximately 75 percent impervious and 25 percent pervious surfaces. Half of the campus area discharges storm water into the City's combined sewer system, which serves both storm water runoff and domestic sewer discharge. Stormwater from the other half of the campus flows via the City storm drains to the American River. A City-owned storm water detention basin designed for 10-year flows is located on the campus.

With the implementation of the Hospital Seismic Demolition and Office Replacement it is anticipated that the total area of impervious surfaces would actually decrease slightly with the demolition of two buildings and the subsequent addition of open space and landscape areas. As a result of the decrease in impervious surfaces, the site storm water runoff volumes are also expected to decrease.

Solid Waste

As stated in the 2010 LRDP EIR, solid waste is separated into appropriate waste streams. Medical waste and hazardous chemical and radioactive waste are packaged and labeled, and categorized for transport to appropriate off-campus licensed disposal sites. Wastes generated on the project site would be disposed in a similar manner.

Electrical Power, Chilled and Hot Water for Heating and Cooling

The Central Cogeneration Plant (Central Plant) provides normal and emergency electrical power, chilled and hot water for heating and cooling, and process steam to most campus buildings. The Central Plant uses natural gas provided by Pacific Gas & Electric Company. The Central Plant is designed to accommodate some growth in utility demand. The proposed North Addition Office Building would be served by the existing Central Plant. Refer to **Figure 3.0-2** for the location of the Central Plant.

As previously discussed, the proposed North Addition Office Building would be constructed to meet all UC sustainability goals and would seek a UC equivalent LEED® Gold Certification or better. As a result, because of the efficiencies in the new building and the decrease in total building space on the campus, it is anticipated that overall energy use on the Sacramento campus would decrease with project implementation.

Natural Gas

Pacific Gas & Electric Company (PG&E) provides natural gas to the campus by 28 gas services from gas distribution piping mains on V Street, Stockton Boulevard, Broadway, 45th Street, 48th Street, Y Street, and 2nd Avenue. The proposed new building would be served by existing gas mains located near the project site.

As previously discussed, the proposed North Addition Office Building would be constructed to meet all UC sustainability goals and would seek a UC equivalent LEED® Gold Certification or better. As a result, because of the efficiencies in the new building and the decrease in total building space on the campus, overall use of natural gas on the Sacramento campus would decrease with project implementation.

Telecommunications

The Campus owns and operates its own telecommunications infrastructure. Only modest changes to this infrastructure are anticipated as a result of the proposed project.

3.6 UC SUSTAINABLE PRACTICES POLICY

The University of California has an established a sustainability policy and has most recently update the policy in May 2015. The Sustainable Practices Policy establishes goals in nine areas of sustainable practices: green building, clean energy, transportation, climate protection, sustainable operations, waste reduction and recycling, environmentally preferable purchasing, sustainable foodservice and sustainable water systems. The proposed project will contain certain activities that are related to the UC Sustainability Practices Policy and the on-going implementation of the policy helps to reduce environmental impacts. The proposed project would target energy efficiency in the proposed North Addition Office Building and LEED Gold Certification of the North Addition Office Building.

3.7 PROJECT APPROVALS

As a public agency principally responsible for approving or carrying out the proposed project, The Regents is the Lead Agency under CEQA and is responsible for reviewing and certifying the adequacy of the environmental document and approving the proposed project. It is anticipated that The Regents will

consider approval of the North Addition Office Building project component in November 2015 and that subsequent approvals for the demolition of the Housestaff Building and the North/South Wing demolition and façade reconstruction portions of the proposed project would be considered in 2016 or 2017.

4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

4.1 INTRODUCTION

This section of the Focused Tiered Draft Environmental Impact Report (EIR) presents potential environmental impacts of the proposed Hospital Seismic Demolition and Office Replacement project (proposed project). The scope of the analysis and key attributes of the analytical approach are presented below to assist readers in understanding the manner in which the impact analysis has been conducted in this Draft EIR.

4.2 LEVELS OF SIGNIFICANCE

The Focused Tiered Draft EIR uses a variety of terms to describe the levels of significance of adverse impacts identified during the course of the environmental analysis. The following are definitions of terms used in this Draft EIR:

- **Significant and Unavoidable Impact.** Impacts that exceed the defined standards of significance and cannot be avoided or reduced to a less than significant level through the implementation of feasible mitigation measures.
- **Significant Impact.** Impacts that exceed the defined standards of significance and that can be eliminated or reduced to a less than significant level through the implementation of feasible mitigation measures.
- **Potentially Significant Impact.** Significant impacts that may ultimately be determined to be less than significant; the level of significance may be reduced in the future through implementation of policies or guidelines (that are not required by statute or ordinance), or through further definition of the project detail in the future. Potentially Significant Impacts may also be impacts about which there is not enough information to draw a firm conclusion; however, for the purpose of this Draft EIR, they are considered significant. Such impacts are equivalent to Significant Impacts and require the identification of feasible mitigation measures.
- **Less Than Significant Impact.** Impacts that are adverse but that do not exceed the specified standards of significance.
- **No Impact.** The project would not create an impact.

4.3 APPROACH TO IMPACT ANALYSIS

The preparation of this Focused Tiered Draft EIR was preceded by an Tiered Initial Study (included in **Appendix 1.0, Notice of Preparation, Initial Study, and Scoping Comments**), which determined that the proposed project would not result in significant or potentially significant impacts on certain resource areas. Therefore, this Draft EIR evaluates project impacts in eight of the 17 resource areas on the Appendix G California Environmental Quality Act (CEQA) checklist.

For each of the eight resource areas evaluated in the sections that follow, the Draft EIR describes the existing environmental setting, the potential for the proposed project to significantly affect the existing resources, and recommended mitigation measures that could reduce or avoid potentially significant impacts. Each of the resource sections also clearly identifies those impacts that were determined in the Initial Study to be less than significant, and thus, do not require detailed evaluation in this Draft EIR.

For purposes of the analyses in this Draft EIR, the year 2015 is used to establish the baseline or existing conditions. Impacts are evaluated in terms of environmental changes as a result of implementation of the proposed project as compared to existing conditions in 2015.

4.4 APPROACH TO CUMULATIVE IMPACT ANALYSIS

CEQA requires that an EIR discuss cumulative impacts, in addition to project-specific impacts. In accordance with CEQA, the discussion of cumulative impacts must reflect the severity of the impacts and the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone. According to Section 15355 of the *2015 State CEQA Guidelines*:

“Cumulative impacts” refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

- (a) The individual effects may be changes resulting from a single project or a number of separate projects.*
- (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.*

Section 15130(a)(1) of the *State CEQA Guidelines* further states that “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts.”

Section 15130(a) of the *State CEQA Guidelines* also requires that EIRs discuss the cumulative impacts of a project when the project's incremental effect is “cumulatively considerable.”¹ Where a Lead Agency is examining a project with an incremental effect that is not cumulatively considerable, it need not consider the effect significant but must briefly describe the basis for its conclusion. If the combined cumulative impact associated with the project's incremental effect and the effects of other projects is not significant, Section 15130(a)(2) of the *State CEQA Guidelines* requires a brief discussion in the EIR of why the cumulative impact is not significant and why it is not discussed in further detail. Section 15130(a)(3) of the *State CEQA Guidelines* requires supporting analysis in the EIR if a determination is made that a project's contribution to a significant cumulative impact is rendered less than cumulatively considerable and, therefore, is not significant. CEQA recognizes that the analysis of cumulative impacts need not be as detailed as the analysis of project-related impacts, but instead should “be guided by the standards of practicality and reasonableness” (*State CEQA Guidelines* Section 15130(b)). The discussion of cumulative impacts in this Draft EIR focuses on whether the impacts of the proposed project are cumulatively considerable.

The fact that a cumulative impact is significant does not necessarily mean that the project's contribution to the cumulative impact is significant as well. Instead, under CEQA, a project-related contribution to a significant cumulative impact is only significant if the contribution is “cumulatively considerable.” To support each significance conclusion, the Draft EIR provides a cumulative impact analysis; and where project-specific impacts have been identified that, together with the effects of other related projects, could result in cumulatively significant impacts, these potential impacts are documented.

Section 15130(b) of the *State CEQA Guidelines* defines consideration of the following two elements as necessary to provide an adequate discussion of cumulative impacts:

- (A) a list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the agency, or
- (B) a summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative

¹ Under Section 15065(a)(3) of the *State CEQA Guidelines*, “cumulatively considerable” means that “the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.”

effect. Such plans may include: a general plan, regional transportation plan, or plans for the reduction of greenhouse gas emissions.

Because this Draft EIR is tiered from the 2010 LRDP EIR, for all operational impacts of the proposed project, this EIR relies on the cumulative impact analysis in the 2010 LRDP EIR. However, to evaluate temporary construction and demolition impacts, the City of Sacramento was contacted to obtain a list of approved and pending projects that potentially could be under construction at the same time as the proposed project and in its vicinity such that potential short-term cumulative impacts could occur. The City informed the Campus that there is one approved residential mixed use project at the intersection of Stockton Boulevard and T Street.

The Stockton and T Street Mixed-Use project would remove the existing 120,000 sf vacant office building (formerly AT&T) and associated parking lot and subdivide the property for construction of a mixed-use residential and commercial development. The proposed project includes a 214-unit, five-story, multi-family housing complex with ground floor commercial and parking garage on the corner of Stockton Boulevard and T Street. In addition, the proposed project includes construction of approximately 24 single-family homes between S Street and US 50. While the construction timeline for the Stockton and T Street Mixed-Use project is not known, the project has been approved by the City, and thus it could commence construction anytime. In order to present a conservative analysis, the Campus has assumed that the construction of the Stockton and T Street Mixed-Use project would overlap with the proposed Hospital Seismic Demolition and Office Replacement project and have evaluated the cumulative construction impacts of both projects.

4.1 AESTHETICS

4.1.1 INTRODUCTION

This section presents existing visual resources at the project site and analyzes the potential for implementation of the proposed Hospital Seismic Demolition and Office Replacement project (proposed project) to affect those resources. Information and analysis presented in this section is based on preliminary project design studies, and review of the 2010 LRDP Environmental Impact Report (EIR) for the University of California, Davis Sacramento Campus (Sacramento campus).

The overall visual character of a given area results from the unique combination of natural landscape features such as landform, water, and vegetation patterns as well as built features such as buildings, roads, and other structures. For purposes of this analysis, visual or aesthetic resources are generally defined as aesthetically pleasing natural and built landscape features that are visible to humans from public vantage points.

Public comments related to aesthetics received in response to the Notice of Preparation (NOP) issued for this Draft EIR included a request to consider privacy issues from the new building and planting of tall trees for privacy between the proposed building and nearby residential areas north of V Street. All comment letters received in response to the NOP are provided in **Appendix 1.0** of this Draft EIR.

4.1.2 ENVIRONMENTAL SETTING

4.1.2.1 Project Site

As previously discussed in **Section 3.0, Project Description**, the proposed project includes work on three sites (North Addition Office Building, Housestaff Building, and North/South Wing) located within the northwestern portion of the Sacramento campus. The three project sites are shown on **Figure 3.0-3, Project Site Locations** and **Figure 3.0-4, North Addition Office Building Project Site Detail**.

The campus appears as an urbanized, highly developed area and is currently developed with medical facilities and support buildings, roadways, parking lots, and landscaping. The proposed project would be located in an area identified as the Hospital Zone in the 2010 LRDP. Buildings in the Hospital Zone include the UC Davis Health System Main Hospital (Main Hospital), Cypress Building, Housestaff Building, and buildings that house Medical Records, Patient Support Services, Pathology Support, and University Police Department. Buildings in the Hospital Zone range in height from one story to 14 stories. In addition to surface parking lots, there are two aboveground parking structures in the zone. Open space areas are vegetated with non-native grasses, mature trees, and shrubs.

The existing visual character of the Sacramento campus's built environment is typical of a hospital and medical center campus. Established in the 1850s as the Sacramento County Hospital, the existing campus buildings date to as far back as 1916 and include buildings of various ages and architectural styles. The most visually prominent building is the 14-story Davis Tower, which is part of the Main Hospital. Many of the buildings are painted with off-white and muted brown tones and have grey or red-tiled roofs. Some buildings display an industrial look and utilitarian quality.

The 2010 LRDP provides that within the Hospital Zone, building heights will be limited to three stories between 40 and 100 feet of the northern property line, with six story buildings permitted between 100 and 180 feet, and up to 14 stories (230 feet) south of that. In addition, no new above grade building construction is to take place within 40 feet of the property line. This buffer zone would provide a setback between the new buildings built on the campus and adjoining residential neighborhoods to the north and east. The buffer is intended to be a minimum of 40 feet wide (where feasible) and attractively landscaped.

For purposes of this study, the project viewshed is defined as the general area from which the project sites would be visible to the public. The project sites cannot be viewed from a single off-site vantage point due to the flat topography and the presence of off-campus buildings and street trees. However, portions of the project sites are visible from nearby residential neighborhoods, public roadways, and commercial buildings. Views of portions of the project sites are available from single-family homes along V Street and throughout the Elmhurst Neighborhood, and from commercial buildings along Stockton Boulevard.

4.1.2.2 Surrounding Land Uses

The Sacramento campus is surrounded by a mix of urban uses, including regional commercial, low-density single-family residential neighborhoods, and a higher-density mixed single- multi-family residential neighborhood. Stockton Boulevard, along the western boundary of the campus, is lined with one- to three-story office buildings and a small amount of retail. A Shriners Hospital is located on Stockton Boulevard just south of X Street across from the Main Hospital.

The Elmhurst neighborhood to the north and east of the campus is a residential neighborhood consisting primarily of single-family homes. To the west (west of commercial business buildings along Stockton Boulevard) is the North Oak Park neighborhood, also residential, with a mix of single-family and multi-family residences. These neighborhoods can be characterized as pre-World War II traditional neighborhoods. Multi-family residential uses predominate in the Fairgrounds neighborhood to the southeast of the campus.

Between the southern edge of the campus and Broadway are located several public institutions and offices, including Marian Anderson Elementary School (now closed), and County and state office

buildings. These public office uses continue south of Broadway as well. The Broadway Office Building owned by the Sacramento campus houses the campus's administrative offices.

4.1.3 REGULATORY FRAMEWORK

4.1.3.1 Local Plans and Policies

The Sacramento campus is a University of California (University) campus that conducts work within the University's mission on land that is owned or controlled by The Board of Regents of the University of California (The Regents). As a state entity, the University is exempt under the state constitution from compliance with local land use regulations, including general plans and zoning. The only local land use plans applicable to the campus is the 2010 LRDP. The following subsection summarizes the planning principles in the 2010 LRDP related to aesthetics.

UC Davis Sacramento Campus 2010 LRDP Planning Principles

The 2010 LRDP proposes six fundamental planning principles that form the basis for implementing the LRDP. Principle 2, *Improve Campus Open Space and Landscape Character*, and Principle 5, *Provide Attractive Campus Entries and Edges*, are most applicable to aesthetic aspects of new development. The 2010 LRDP, set forth to assist the UC Davis Health System in creating a built environment to achieve the goals, programmatic needs, and campus objectives identified in its Strategic Plan, includes the following principles related to aesthetics that are pertinent to the proposed project:

- Continue strong landscape treatment of major roads to provide shaded sidewalks for pedestrians and an image similar to the greater Sacramento downtown streets.
- Create a network of secondary, building-related courtyards with amenities such as benches and shade, to provide an outdoor destination for patients, visitors, faculty, and staff.
- Establish a landscape edge around the campus that will buffer neighbors from campus facilities and operations and provide a green campus image appropriate to a campus of the University of California.

4.1.4 IMPACTS AND MITIGATION MEASURES

4.1.4.1 Significance Criteria

The impacts on aesthetics from the implementation of the proposed project would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Have a substantial adverse effect on a scenic vista;

- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

4.1.4.2 CEQA Checklist Items Adequately Analyzed at the 2010 LRDP Level or Not Applicable to the Project

- Have a substantial adverse effect on a scenic vista
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway

As discussed in Section 4.1, Aesthetics of the 2010 LRDP EIR, a scenic vista is generally defined as an expansive view of highly valued landscape as observable from a publicly accessible vantage point. The Sacramento campus, including the project sites, is not part of a scenic vista as designated by any local plans or policies. Furthermore, the project sites are flat and located in an urban area surrounded by urban and suburban uses. The intervening buildings and mature trees limit short-range and long-range views to and from the Sacramento campus. Therefore, as noted in the 2010 LRDP EIR, implementation of the 2010 LRDP would not adversely affect any scenic vistas. No further analysis of impacts on scenic vistas is required for the Hospital Seismic Demolition and Office Replacement Project.

Views of the campus site are available from US Highway 99 (US 99), US 50, and Interstate 80 (I-80), in addition to local routes. These roadways are not designated as state scenic highways. Therefore, as noted in the 2010 LRDP EIR, implementation of the 2010 LRDP would not adversely affect any scenic resources. No further analysis of impacts on scenic resources is required for the Hospital Seismic Demolition and Office Replacement Project.

4.1.4.2 Methodology

Information and analysis presented in this section is based on preliminary project design studies, and review of the 2010 LRDP, and the 2010 LRDP EIR for the Sacramento campus.

4.1.4.3 2010 LRDP EIR Mitigation Measures Included in the Proposed Project

Table 4.1-1, 2010 LRDP EIR Mitigation Measures, presents the mitigation measures in the 2010 LRDP EIR that are applicable to the proposed project. Since these previously adopted mitigation measures are already being carried out as part of implementation of the 2010 LRDP, they are included in and are a part

of the proposed project and will not be readopted. Implementation of these mitigation measures is assumed as part of the project impact analysis.

**Table 4.1-1
2010 LRDP EIR Mitigation Measures**

Mitigation Measure	Description
LRDP MM AES-1	The University will install landscaping within the 40-foot landscape buffer adjacent to new specific projects that are approved. Installation would occur within one year of the development of the new projects.
LRDP MM AES-2a	Design for specific projects shall provide for the use of textured non-reflective exterior surfaces and non-reflective glass.
LRDP MM AES-2b	Except as provided in LRDP Mitigation Measure AES-2c , all new outdoor lighting shall utilize directional lighting methods with shielded and cutoff type light fixtures to minimize glare and upward directed lighting.
LRDP MM AES-2c	Non-cutoff, non-shielded lighting fixtures used to enhance nighttime views of walking paths, specific landscape features, or specific architectural features shall be reviewed by the Campus Facilities Planning, Design and Construction staff prior to installation to ensure that: (1) the minimum amount of required lighting is proposed to achieve the desired nighttime emphasis, and (2) the proposed illumination creates no adverse effect on nighttime views.
LRDP MM AES-2d	The University will implement the use of the specific lighting design and equipment when older lighting fixtures and designs are replaced over time.

Source: UC Davis Sacramento Campus, 2010 LRDP EIR, Section 4.1, Aesthetics.

4.1.4.4 Project Impacts and Mitigation Measures

Impact AES-1: Implementation of the proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings. (*Less than Significant*)

Demolition of the North/South Wing and the Housestaff Building, and construction of the proposed North Addition Office Building would result in a visual change to the project sites and their surroundings. The visual character and quality of the project sites would be altered during construction and upon completion of the three project components. The changes are described below by phase and evaluated for their potential to significantly affect the visual character and quality of the project sites.

Impact during Construction

The existing single-story buildings on the North Addition Office Building site would be demolished under a separate project in late 2015. At commencement of the construction North Addition Office Building, the site would be excavated and recompacted for the foundation work, and additional infrastructure would be installed to support the new building. The appearance of the construction site

would vary depending on the work and equipment being used at the site. As is customary for all construction, the site would be fully enclosed with temporary construction fencing; all fencing would be eight feet tall and have a wind screening covering the entire fence, with the exception of the fencing along the northern edge, which would be of plywood, or other solid material in order to provide a barrier for construction noise attenuation. As such, most of the construction operations would not be visible to local residents or motorists using nearby streets. However, when in use on the site, large construction equipment would be visible above the perimeter fence and the building under construction would also be visible. The visual effects of construction activities would be temporary (i.e., for the duration of the construction activities) and the project site would appear similar to other construction sites, which is not unusual in urban areas. Furthermore, the project vicinity is not a scenic area where views of construction activities could adversely affect the scenic quality. Therefore, project construction activities would not result in a significant visual impact.

The demolition components of the proposed project would take place in multiple phases, potentially beginning with the demolition of the Housestaff Building to provide an area for construction staging. If this becomes the chosen option, the site would be fenced and gated. Once fencing and gates were in place, the building and improvements would be demolished and a crushed-aggregate base parking lot would be built. Construction trailers, materials staging and contractor parking would all be accommodated on this parking lot. Due to the location of the Housestaff Building site, views of this staging area would not be available from most off-site locations.

As described in **Section 3.0, Project Description**, the hard demolition of the North/South Wing would be accomplished in six separate sequences mainly working across the site from south to north. The Ramp Tower and the one-story Surgical Center would be demolished first, followed by the southern end of the Wing. The next sequence would demolish the East Tower connector as well as the 1928 South Annex, followed by demolition of the central portion of the Wing. The final sequences would demolish the northern portion of the Wing and lastly the 1928 North Annex. Although due to building height, demolition work would be visible to viewers in the area, especially on Stockton Boulevard, the visual effects of demolition activities would be temporary (i.e., for the duration of the demolition activities) and the project site would appear similar to other construction sites, which is not unusual in urban areas.

In summary, due to project location and screening provided by construction fencing and intervening buildings, and because of the temporary nature of the construction and demolition activities, the impact of project demolition and construction on visual character and quality would be less than significant.

Impact upon Completion of Construction

Upon project completion, the visual character of the three project sites would change. North Addition Office Building would place a six-story office building on a site that currently is occupied by single-story temporary buildings. The Housestaff Building would be replaced with a pedestrian plaza and landscaping, and the North/South Wing would also be replaced with a landscaped area and a Main Hospital would be fitted with a new façade on the west side facing Stockton Boulevard. Although the change in the area of the North Addition Office Building would be the greatest, the new building would not adversely affect the visual character of the area. The building would be located approximately 120 feet from the campus property line and would be limited to six-stories in height, which meets the design feature constraint in the 2010 LRDP. Its height and mass would be harmonious with that of existing adjacent buildings and would be appropriate for its setting (See **Figure 3.0-5, Project Site Context**). The proposed project would also include the provision of a 40-foot landscaped buffer with plantings that would include trees that will grow to provide partial screening of the new building along the edge of the campus to be located between the existing facilities equipment yard and the University Police building along V Street as required under **LRDP Mitigation Measure AES-1**.

Therefore, upon project completion, the proposed project would not result in a substantial, demonstrable negative effect on the visual character and quality of the area. Further, as described above, the flat topography and mixed land-use setting alleviates the potential of the proposed project to block, degrade, or obstruct any scenic view or vista now observed from a public area. The impact would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Impact AES-2: **Implementation of the proposed project would create new sources of light and glare that could adversely affect day or nighttime views in the area.**
(Potentially Significant; Less than Significant with Mitigation)

Impact during Construction

Existing light sources on and adjacent to, the proposed North Addition Office Building and Housestaff Building sites are primarily associated with the existing buildings and uses in the area which include Patient Support Services Building, University Police and the Main Hospital. During construction, nighttime lighting would be maintained on the (former) Housestaff Building and North Addition Office Building project sites for security purposes. Since construction activity would be limited to daytime hours, no lighting associated with the operation of construction equipment would be utilized during the nighttime. The use of security lighting during construction would be temporary. However, the potential

increase in ambient illumination levels could be significant if not properly controlled. **Mitigation Measures AES-1** and **AES-2** are proposed to address this impact. **Mitigation Measure AES-1** would limit the use of security lights to only those locations on the construction sites requiring illumination. **Mitigation Measure AES-2** would require that all security lights are properly shielded and projected downwards such that light is directed onto the project site only. With implementation of these mitigation measures and temporary usage of nighttime security lighting during construction, the impact to existing ambient illumination levels in the project area during construction would be less than significant.

Impact during Operations

Construction of the proposed North Addition Office Building would add new sources of light and glare within an already developed area. Sources of new light and glare could include expansive windows and exterior nighttime lighting fixtures. During the day, sunlight could reflect off the windows of the building and could thereby create additional glare. During the nighttime, the building and its surrounding area would be lit for nighttime operations and for security reasons.

As discussed in section 3.0, **Project Description**, UCDHS has developed a detailed set of design criteria for both the interior and exterior of the North Addition Office Building. To provide the nearby single-family residential neighborhood to the north with a sense of privacy, exterior design criteria related to light and glare include the following: (1) respect the neighbor's desire for privacy - create a screen or filter on the north façade; and (2) reduce glare to other buildings. These design criteria would serve to minimize the project's light and glare impacts to adjacent residential land uses, as well as campus buildings and open space areas.

In addition, **LRDP Mitigation Measures AES-2a** through **2d** have been incorporated into the proposed project. These require that the project design include textured non-reflective exterior surfaces and non-reflective glass, directional lighting methods with shielded and cutoff type light fixtures to minimize glare and upward directed lighting, and that to the extent the project includes non-cutoff, non-shielded lighting fixtures, those fixtures shall be reviewed by the Campus Facilities Planning, Design and Construction staff. In addition to the above, the building's 120-foot setback from the northern property line would also help minimize any light and glare impacts on areas to the north of the campus, and light and glare to nearby off-site areas would also be minimized by the intervening Patient Support Services and University Police buildings along V Street and the provision of the proposed landscape buffer. Therefore, the additional light and glare introduced to the area by the proposed building would not adversely affect adjacent land uses and the impact would be less than significant.

Given the eventual demolition of the North/South Wing of the Main Hospital, there is also the potential that ambient light and glare would be reduced in the general project vicinity. However, as views of the project site from V Street and Stockton Boulevard are largely blocked by intervening buildings, including Parking Structure 1, and landscaping, this reduction would be minimal.

Mitigation Measures:

- AES-1** The use of security lighting during project construction shall be limited to only those locations on the construction site requiring illumination.
- AES-2** All security lights shall be properly shielded and projected downwards during construction such that light is directed onto the project site only.

4.1.4.5 Cumulative Project Impacts and Mitigation Measures

Cumulative Impact AES-1: **The proposed project, in conjunction with other past, present and reasonably foreseeable future development, would not result in significant cumulative impacts related to aesthetics (*Less than Significant*)**

As previously discussed, upon project completion, the long-term visual character of the project sites, including the proposed North Addition Office Building, the new Main Hospital building façade and the two new pedestrian plazas, would not result in a negative aesthetic effect as they would be built in an area that contains a variety of building types and heights. The cumulative visual change in the immediate vicinity of the project site would be minimal. The nearest reasonably foreseeable project is located at the northwest corner of Stockton Boulevard and T Street, at a location that has no visual connection with the proposed project. Therefore, the cumulative impacts to visual character would be less than significant.

Existing development within the city of Sacramento and the remainder of Sacramento County outside of the city limits has resulted in a cumulative increase in nighttime lighting. The cumulative effect of this past development has resulted in a cumulative loss of available nighttime views. The proposed project would be implemented in an area with existing urban uses, in an area already exposed to lighting from existing development. With implementation of **LRDP Mitigation Measures AES-2b** through **AES-2d**, the proposed project's contribution to cumulative increases in nighttime lighting would be minimized and the project's contribution would not be cumulatively considerable. Therefore, the cumulative light impacts would be less than significant.

One of the main sources of existing glare is multi-story buildings with glass-dominated façades located in the downtown area of Sacramento or along major roadways. However, with implementation of the Campus's design review process, including the implementation of strict design criteria, and **LRDP Mitigation Measure AES-2a**, the proposed project would not result in a cumulatively considerable contribution to the potentially significant daytime glare impacts in the Sacramento area and impacts would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

4.1.5 REFERENCES

University of California, Davis Sacramento Campus. 2009. *2010 Long Range Development Plan*. November.

University of California, Davis Sacramento Campus. 2010. *2010 Long Range Development Plan Environmental Impact Report*. July.

4.2.1 INTRODUCTION

This section discusses the existing regional air quality conditions in Sacramento County and evaluates the potential air quality impacts associated with implementation of the proposed Hospital Seismic Demolition and Office Replacement project (proposed project). The impacts associated with the proposed project are evaluated based on the thresholds of significance and significance criteria recommended by the Sacramento Metropolitan Air Quality Management District (SMAQMD). A discussion of the applicable federal, state, regional, and local agencies that regulate, monitor, and control air emissions, as well as the applicable SMAQMD rules and regulations that pertain to the proposed project is also provided. This analysis has been prepared in accordance with the SMAQMD 2009 *Guide to Air Quality Assessment in Sacramento County* as updated through June 2015. Copies of the modeling runs and supporting technical data are provided in **Appendix 4.2** of this EIR.

Public and agency comments related to air quality received in response to the Notice of Preparation (NOP) circulated for the Draft EIR requested that UC Davis control dust during the demolition efforts. All comment letters received in response to the NOP are provided in **Appendix 1.0** of this Draft EIR.

4.2.2 ENVIRONMENTAL SETTING

4.2.2.1 Regional Setting

The California Air Resources Board (CARB) has divided California into regional air basins according to topographic features. The proposed project is located within the City of Sacramento, which is located in the Sacramento County portion of the Sacramento Valley Air Basin (SVAB). The SVAB is under the jurisdiction of the SMAQMD for issues related to air quality planning. The primary factors that determine air quality are the locations of air pollutant sources, the amount of pollutants emitted, and meteorological and topographical conditions affecting their dispersion. Atmospheric conditions, including wind speed, wind direction, and air temperature gradients, interact with the physical features of the landscape to determine the movement and dispersal of air pollutants.

The SVAB includes Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and Yuba counties, the western urbanized portion of Placer County, and the eastern portion of Solano County. The SVAB occupies 15,040 square miles and has a population of more than 2 million people. The SVAB is bounded by the North Coast Ranges on the west and Northern Sierra Nevada Mountains on the east. The intervening terrain is flat and is often described as a bowl shaped valley.

Because of its inland location, the climate of the SVAB is more extreme than the climate in the San Francisco Bay Area Air Basin or South Coast Air Basin. The SVAB has a Mediterranean climate, characterized by hot dry summers and mild rainy winters. During the year the temperature may range from 20 to 115 degrees Fahrenheit with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 20 inches with snowfall being very rare. The prevailing winds are moderate in strength and vary from moist breezes from the south to dry land flows from the north.

The mountains surrounding the SVAB create a barrier to airflow, which can trap air pollutants in the valley when meteorological conditions are right and a temperature inversion exists. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells lie over the valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in the air. The surface concentrations of pollutants are highest when these conditions are combined with smoke from agricultural burning or when temperature inversions trap cool air, fog, and pollutants near the ground.

The ozone season (May through October) in the SVAB is characterized by stagnant morning air or light winds with the Delta sea breeze arriving in the afternoon out of the southwest. Usually the evening breeze transports the airborne pollutants to the north out of the SVAB. During about half of the days from July to September, however, a phenomenon called the “Schultz Eddy” prevents this from occurring. Instead of allowing for the prevailing wind patterns to move north carrying the pollutants out of the valley, the Schultz Eddy causes the wind pattern and pollutants to circle back southward. This phenomenon’s effect exacerbates the pollution levels in the area and increases the likelihood of violating the federal and state air quality standards.¹

4.2.2.2 Ambient Air Quality Standards

Both the federal government and the State of California have established ambient air quality standards for several different pollutants. The United States Environmental Protection Agency (U.S. EPA) sets National Ambient Air Quality Standards (NAAQS) for the following seven “criteria” pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), respirable particulate matter (PM₁₀), fine particulate matter (PM_{2.5}), and lead. California Ambient Air Quality Standards (CAAQS) have been adopted for these pollutants, as well as for sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride. California standards are generally stricter than national standards. Each of the criteria

¹ Sacramento Metropolitan Air Quality Management District, *Guide to Air Quality Assessment in Sacramento County*, (2009) 1-7 – 1-8.

pollutants that are relevant to this project and that are of concern in the Sacramento County portion of the SVAB is briefly described below. While reactive organic gases (ROGs) are not considered to be criteria air pollutants, they are widely emitted by sources associated with land development projects and undergo photochemical reactions in the atmosphere to form O₃; therefore, ROGs are relevant to this project and are of concern in the area.²

- **Ozone (O₃).** O₃ is a gas that is formed when ROGs and NO_x, both byproducts of internal combustion engine exhaust and other sources undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.
- **Reactive Organic Gases (ROGs).** ROGs are compounds comprised primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Adverse effects on human health are not caused directly by ROGs, but rather by reactions of ROGs to form secondary air pollutants, including ozone. ROGs are also referred to as reactive organic compounds (ROCs) or volatile organic compounds (VOCs). ROGs themselves are not “criteria” pollutants; however, they contribute to formation of O₃.
- **Nitrogen Dioxide (NO₂).** NO₂ is a reddish-brown, highly reactive gas that is formed in the ambient air through the oxidation of nitric oxide (NO). NO₂ is also a byproduct of fuel combustion. The principal form of NO_x produced by combustion is NO, but NO reacts quickly to form NO₂, creating the mixture of NO and NO₂ referred to as NO_x. NO₂ acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_x is only potentially irritating. NO₂ absorbs blue light, the result of which is a brownish-red cast to the atmosphere and reduced visibility.
- **Carbon Monoxide (CO).** CO is a colorless, odorless gas produced by the incomplete combustion of fuels. CO concentrations tend to be the highest during winter mornings, with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, and motor vehicles operating at slow speeds are the primary source of CO in the basin, the highest ambient CO concentrations are generally found near congested transportation corridors and intersections.
- **Sulfur Dioxide (SO₂).** SO₂ is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high-sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO₂ oxidizes in the atmosphere, it forms sulfates (SO₄).
- **Respirable Particulate Matter (PM₁₀).** PM₁₀ consists of extremely small, suspended particles or droplets 10 microns or smaller in diameter. Some sources of PM₁₀, like pollen and windstorms, are naturally occurring. However, in populated areas, most PM₁₀ is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities.
- **Fine Particulate Matter (PM_{2.5}).** PM_{2.5} is particulate matter that is 2.5 micrometers or smaller in diameter. The sources of PM_{2.5} include fuel combustion from automobiles, power plants, wood

² U.S. Environmental Protection Agency, “Ground-level Ozone,” <http://www.epa.gov/air/ozonepollution/>.

burning, industrial processes, and diesel-powered vehicles such as buses and trucks. These fine particles are also formed in the atmosphere when gases such as sulfur dioxide, NO_x, and ROG_s are transformed in the air by chemical reactions.

A summary of state and federal ambient air quality standards and the effects of the exceedance of these standards on health are shown in **Table 4.2-1, Ambient Air Quality Standards** on page 4.2-5 of the 2010 UC Davis Sacramento Campus LRDP EIR. For some pollutants, separate standards have been set for different periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values, such as protection of crops, protection of materials, or avoidance of nuisance conditions.

The U.S. EPA and CARB designate air basins or portions of air basins as being in “attainment” or “nonattainment” for each of the criteria pollutants. Areas that do not meet the standards shown in **Table 4.2-1** are classified as nonattainment areas (see **Table 4.2-1, Sacramento County Attainment Status**). Nonattainment areas are ranked (marginal, moderate, serious, severe, or extreme) according to the degree of nonattainment. The NAAQS (other than O₃, PM₁₀, PM_{2.5}, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. The NAAQS for O₃, PM₁₀, and PM_{2.5} are based on statistical calculations over one- to three-year periods, depending on the pollutant. The CAAQS are not to be exceeded during a three-year period.

**Table 4.2-1
Sacramento County Attainment Status**

Pollutant	Federal Standards	State Standards
Ozone 1-hour	Nonattainment/Severe	Nonattainment/Serious
Ozone 8-hour	Nonattainment/Severe ¹	Nonattainment/Severe-15
PM ₁₀	Attainment (24-hour)	Nonattainment (24-hour and Annual)
PM _{2.5}	Nonattainment (24-hour)	No State Standard for 24-hour
PM _{2.5}	Unclassified/Attainment (Annual)	Nonattainment (Annual)
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment ³	Attainment
Sulfur Dioxide	Attainment Pending (1-hour)	Attainment
Lead	Attainment	Attainment
Hydrogen Sulfide	No federal standards	Unclassified

Pollutant	Federal Standards	State Standards
Sulfates	No federal standards	Attainment
Vinyl Chloride	No federal standards	Unclassified
Visibility-Reducing Particulates	No federal standards	Unclassified

Source: Sacramento Metropolitan Air Quality Management District, "Air Quality Standards Attainment Status," <http://www.airquality.org/aqdata/attainmentstat.shtml>. August 2015.

¹ A formal request for voluntary reclassification from "serious" to "severe" for the 8-hour ozone nonattainment area with an associated attainment deadline of June 15, 2019, was submitted by CARB to the U.S. EPA on February 14, 2008. The U.S. EPA approved the reclassification request on April 15, 2010.

The determination of whether an area is meeting the state and/or federal standards is based on air quality monitoring data. Some areas are unclassified, which means there is insufficient monitoring data for determining attainment or nonattainment. Unclassified areas are typically treated as being in attainment. Because the attainment/nonattainment designation is pollutant specific, an area may be classified as nonattainment for one pollutant and attainment for another. Similarly, because the state and federal standards differ, an area could be classified as attainment for the federal standards of a pollutant and as nonattainment for the state standards of the same pollutant.

4.2.2.3 Toxic Air Contaminants

In addition to criteria pollutants, CARB periodically assesses the health impacts and ambient levels of toxic air contaminants in California. The U.S. EPA assesses health impacts for hazardous air pollutants. A toxic air contaminant is defined by California Health and Safety Code:³

"Toxic air contaminant" means an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the federal act (42 U.S.C. Sec. 7412(b)) is a toxic air contaminant.

As noted in the definition above, all U.S. EPA hazardous air pollutants are considered to be toxic air contaminants. CARB has assessed inhalation cancer risk for the state and has provided risk maps based on the Assessment System for Population Exposure Nationwide (ASPEN)⁴ dispersion model. The ASPEN model is used in the U.S. EPA's National Air Toxics Assessment⁵ study. The risk maps depict inhalation cancer risk due to modeled outdoor toxic pollutant levels, and do not account for cancer risk due to other types of exposure (i.e., direct or ingestion). Based on CARB's assessment, the largest contributor to

³ California Air Resources Board, "California Air Pollution Control Laws: Health and Safety Code - Section 39655," <http://www.arb.ca.gov/bluebook/bb00/toc00.htm>.

⁴ US Environmental Protection Agency, "The ASPEN Model," <http://www.epa.gov/ttn/atw/nata/asp.html>. n.d.

⁵ US Environmental Protection Agency, "National Air Toxics Assessments," <http://www.epa.gov/ttn/atw/natamain/>. n.d.

inhalation cancer risk is diesel emissions, which is consistent with the result of other studies, such as the South Coast Air Quality Management District's Multiple Air Toxics Exposure Study III (MATES III).⁶

In 2004, CARB conducted a health risk assessment of airborne particulate matter emissions from diesel-fueled locomotives at the Union Pacific J.R. Davis Yard located in Roseville, California. The study found that the background cancer risk for the broader Sacramento region was 360 in a million for diesel particulate matter and 520 in a million for all toxic air contaminants.⁷

4.2.2.4 Sensitive Receptors

Sensitive populations (sensitive receptors) are more susceptible to the effects of air pollution than is the population at large. The SMAQMD defines sensitive receptors as "facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants." Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors.⁸ Sensitive receptors that are near localized sources of criteria pollutants, toxic air contaminants, and CO are of particular concern. For the purposes of impact assessment, the definition of sensitive receptors is typically expanded to include residences, playgrounds, rehabilitation centers, and athletic facilities.

The 142-acre UC Davis Sacramento Campus (Sacramento campus) contains 1,887,850 square feet of hospital facilities, 621,250 square feet of ambulatory care facilities, 525,575 square feet of education and research facilities, 407,867 square feet of administration and support facilities, and associated parking structures. The campus is bound by V Street on the north, Stockton Boulevard to the West, Broadway Street to the south, and a residential neighborhood to the east. Beyond Stockton Boulevard, V Street, and Broadway Street, residential land uses are located to the north, south, and west, and commercial land uses located to the south of the campus. The proposed project includes the construction and operation of a new office building in the northern portion of the campus adjacent to the Main Hospital, and the demolition of two existing buildings in the same general area. The nearest sensitive receptors would be the patients in the Main Hospital and other facilities on the campus and residents of homes located to the north of V Street.

4.2.3 REGULATORY CONSIDERATION

Air quality within Sacramento County is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work individually, as well as jointly, to improve air

⁶ South Coast Air Quality Management District, "MATES III: Multiple Air Toxics Exposure Study," <http://www.aqmd.gov/prdas/matesIII/matesIII.html>. 2008.

⁷ California Air Resources Board, *Roseville Rail Yard Study*, (2004) 5.

⁸ Sacramento Municipal Air Quality Management District, *CEQA Guide*, (2009) 2-4.

quality through legislation, regulations, planning, policy making, education, and a variety of other programs. The agencies primarily responsible for improving the air quality within the county include the U.S. EPA, CARB, SMAQMD, and the Sacramento Area Council of Governments (SACOG). The City of Sacramento includes policies in its *2030 General Plan* that are designed to improve air quality. The UC Davis Sacramento Campus 2010 LRDP, which was adopted for the Sacramento campus by the University in 2009, also includes policies that govern development on the campus and pertain to air quality. These agencies, their laws, regulations, rules, plans, and policies as they pertain to air quality and the proposed project are discussed below.

4.2.3.1 Federal

The U.S. EPA is responsible for enforcing the Clean Air Act (CAA) and the NAAQS that the act establishes. This agency also has regulatory and enforcement jurisdiction over emission sources beyond state waters (outer continental shelf), and those that are under the exclusive authority of the federal government, such as aircraft, locomotives, and interstate trucking.

The CAA was originally adopted in 1970, but was amended most recently in 1990 with regulations that better protect the public's health and create more efficient methods of lowering pollutant emissions. The major areas of improvement resulting from the amendments include air basin designations (previously discussed), automobile/heavy-duty engine emissions, and toxic air pollutants. The amendments established more stringent standards for hydrocarbons, NO_x, and CO emissions in order to reduce O₃ and CO levels in heavily populated areas. Fuels became more strictly regulated, requiring new fuels to be less volatile, contain less sulfur (regarding diesel fuels), and have higher levels of oxygenates (oxygen-containing substances to improve fuel combustion).

The 1990 Clean Air Act Amendments (CAAA) lists 189 hazardous air pollutants (HAPs), which are carcinogenic, mutagenic, and/or reproductive toxicants, to be reduced. The air toxics program under the CAA involves locating all major (greater than 10 tons per year [tpy]) stationary and area emission sources in order to implement Maximum Achievable Control Technology (MACT) to reduce HAP emissions and their associated health impacts.

States with basins that are not in attainment with the NAAQS are required to submit a State Implementation Plan (SIP) that describes how the air basin will achieve the federal standards by specified dates. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The CAA amendments dictate that states containing areas violating the NAAQS revise their SIP to include extra control measures to reduce air pollution. SIPs are not single documents, but are a

compilation of state regulations, air quality management/attainment plans, programs, and air district rules that are continuously revised to meet CAA amendment requirements.

Local air districts, such as the SMAQMD, and other agencies prepare air quality management/attainment plans and submit them to CARB for review and approval. Once a plan is approved, CARB forwards the plan to the U.S. EPA as a SIP revision. The U.S. EPA reviews the plan to determine if it conforms to the 1990 amendments and would achieve that air basin's air quality goals. Upon a satisfactory review, approval of the plan is published in the *Federal Register*.

In general, air quality management/attainment plans contain a discussion of ambient air data and trends; a baseline emissions inventory; future-year projections of emissions, which account for growth and already adopted control measures; a comprehensive control strategy of additional measures needed to reach attainment; attainment demonstration, which generally involves complex modeling; and contingency measures. Plans may also include interim milestones for progress toward attainment. The status of the Sacramento County portion of the SVAB with respect to attainment with the NAAQS is summarized above in **Table 4.2-1**.

4.2.3.2 State

The California Clean Air Act (CCAA) established a legal mandate for air basins to achieve the CAAQS by the earliest practical date. The CAAQS, established by CARB, apply to the same seven pollutants as the NAAQS, as well as to sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride. The CAAQS are more stringent than the NAAQS, and in the case of PM₁₀ and SO₂, far more stringent.

As a branch of the California Environmental Protection Agency (CalEPA), CARB oversees air quality monitoring, planning, and control throughout California. It is primarily responsible for implementing the CCAA, ensuring conformance with CAA requirements, and for regulating emissions from motor vehicles and consumer products within the state. In addition, CARB sets the CAAQS and control measures for toxic air contaminants (TACs). CARB approves the regional air quality management/attainment plans for incorporation into the SIP and is responsible for preparing those portions of the SIP that are related to mobile source emissions. CARB establishes new standards for vehicles sold in California and for various types of commercially available equipment. It also sets fuel specifications to further reduce vehicular emissions.

CARB also makes area designations for O₃, CO, NO₂, SO₂, PM₁₀, PM_{2.5}, sulfates, lead, hydrogen sulfide, and visibility-reducing particles. Health and Safety Code Section 39607(e) requires CARB to establish and periodically review area designation criteria. These designation criteria provide the basis for CARB to designate areas of the state as "attainment," "nonattainment," or "unclassified" according to state

standards. In addition, Health and Safety Code Section 39608 requires CARB to use the designation criteria to classify areas of the state and to annually review those area designations.

4.2.3.3 Regional

Sacramento Area Council of Governments

The SACOG is an association of local governments in the Sacramento County region that provides transportation planning and funding for the region. Although SACOG is not an air quality management agency, it is responsible for several air quality planning issues. Specifically, as the designated Metropolitan Planning Organization for the Sacramento region, it is responsible, pursuant to Section 176(c) of the 1990 amendments to the federal CAA, for providing current population, employment, travel, and congestion projections for regional air quality planning efforts.

Sacramento Metropolitan Air Quality Management District

The SMAQMD has jurisdiction over most air quality matters within the Sacramento County portion of the SVAB. The SMAQMD regulates most stationary sources of air pollutant in Sacramento County, maintains ambient air quality monitoring stations at numerous locations, and prepares the air quality management/attainment plans for the area that are required under the CAA and CCAA. Additional details regarding SMAQMD planning efforts for regional air quality attainment are summarized in the UC Davis Sacramento Campus 2010 LRDP EIR beginning on page 4.2-14.

SMAQMD Rules and Regulations

The SMAQMD's primary means of implementing its attainment plans is through its adopted rules and regulations. The proposed project would be subject to the following rules adopted by the SMAQMD that are designed to reduce and control pollutant emissions throughout the Sacramento County portion of the air basin.

- **Rule 201 (Permit Required):** This rule requires that any project constructing, altering, replacing, or operating any stationary source operation, the use of which emits, may emit, or may reduce emissions, to obtain an Authority to Construct (ATC) and a Permit to Operate (PTO). This rule applies to the construction and operation of new or modified processes and equipment, except those specifically exempted from permitting requirements.
- **Rule 202 (New Source Review):** This rule applies to all new and modified stationary sources that would emit, after construction, a criteria pollutant for which there is an established NAAQS or CAAQS. The rule provides mechanisms by which an ATC can be granted without interfering with the basin's attainment with ambient air quality standards. These mechanisms offer methods to

generate no net increases in emissions of nonattainment pollutants over specific thresholds as detailed in the rule.

- **Rule 207 (Title V Federal Operating Permit Program):** The purpose of this rule is to establish an operating permitting system consistent with the requirements of 42 U.S.C. Section 7661 et seq. (Title V) and pursuant to 40 CFR Part 70. Stationary sources subject to the requirements of this rule are also required to comply with any other applicable federal, state, or District orders, rules and regulations, including requirements pertaining to prevention of significant deterioration pursuant to Rule 203, Prevention of Significant Deterioration, requirements to obtain an authority to construct pursuant to Rule 201, General Permit Requirements, or applicable requirements under Rule 202, New Source Review.
- **Rule 401 (Ringelmann Chart/Opacity):** This rule limits the discharge of air contaminants (i.e., fugitive dust, diesel exhaust) into the atmosphere through visible emissions and opacity.
- **Rule 402 (Nuisance):** This rule applied to any source operation that emits air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause or have natural tendency to cause injury or damage to business or property. In the event that the project or construction of the project creates a public nuisance, it could be in violation and subject to district enforcement action.
- **Rule 403 (Fugitive Dust):** The purpose of this rule is to reasonably regulate operations that periodically may cause fugitive dust emissions into the atmosphere.
- **Rule 404 (Particulate Matter):** The purpose of this rule is to limit the quantity of particulate matter in the atmosphere through establishment of an emission concentration limit.
- **Rule 405 (Dust and Condensed Fumes):** The purpose of this rule is to limit the discharge of dust and condensed fumes into the atmosphere by establishing emission rates based on process weight.
- **Rule 406 (Specific Contaminants):** The purpose of this rule is to limit the emission of sulfur compounds and combustion contaminants through establishment of emission concentrations.
- **Rule 412 (Stationary Internal Combustion Engines Located at Major Stationary Sources of NO_x):** The purpose of this rule is to limit emissions of NO_x, CO, and non-methane hydrocarbons from the operation of stationary internal combustion engines, rated at more than 50 brake horsepower, located at a major stationary source of NO_x.
- **Rule 413 (Stationary Gas Turbines):** The purpose of this rule is to limit emissions of nitrogen oxides to the atmosphere from the operation of stationary gas turbines.
- **Rule 414 (Natural Gas-Fired Water Heaters):** The purpose of this rule is to limit emissions of nitrogen oxides from natural gas-fired water heaters.
- **Rule 420 (Sulfur Content of Fuels):** The purpose of this rule is to limit the emission of compounds of sulfur from combustion of fuels.

- **Rule 442 (Architectural Coatings):** The purpose of this rule is to limit the quantity of volatile organic compounds in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the District.
- **Rule 902 (Asbestos):** The purpose of this rule is to implement U.S. EPA's National Emission Standard for Hazardous Air Pollutants (NESHAP) for Asbestos (40 C.F.R. Section 61.140 et. seq.) and to limit the emission of asbestos to the atmosphere. The NESHAP requires that all buildings be properly inspected for the presence of asbestos prior to demolition and renovation and that the SMAQMD be notified before any demolition or renovation activity occurs.

4.2.3.4 Local Plans and Policies

The Sacramento campus is a University of California campus that conducts work within the University's mission on land that is owned or controlled by The Regents of the University of California. As an entity of the State Constitution, the University is exempted from compliance with local land use regulations, including general plans and zoning. However, the University seeks to develop its property in a manner that minimizes potential land use conflicts with local jurisdictions to the extent feasible. The UC Davis Sacramento Campus 2010 LRDP is the land use plan that is applicable to all development on the Sacramento campus. The following subsection summarizes elements from that plan that relate to air quality.

UC Davis Sacramento Campus 2010 Long Range Development Plan

The 2010 LRDP does not contain policies that specifically address air quality. However, the LRDP does contain elements with respect to energy-efficiency and encouraging alternative transportation which would reduce air pollutant emissions and emissions of ozone-depleting substances. These elements would encourage walking and bicycling on the campus and in surrounding neighborhoods. The following principles would reduce the project's air quality impacts.

Principle #1 **Ensure Appropriate Facilities Adjacencies.** Facility adjacencies help create efficiencies in operations and in the movement of patients, visitors, students, faculty, and staff. Recognizing existing major building investments, new facilities will be located in reasonable proximity to the current primary UCDHS mission-related uses.

Principle #2 **Improve Campus Open Space and Landscape Character.** While the Sacramento campus has a number of attractive open spaces and landscaped areas, the campus falls short of being the welcoming environment that it might be. For instance, the campus lacks a large green quad or other major open space typically associated with an academic institution. Also, the site does not yet

capture the special nature of “the City of Trees” that characterizes the City of Sacramento, especially the downtown, State Capitol area, and downtown neighborhoods. The planned program growth at the campus would improve the open space character of the campus.

Principle #3

Provide Convenient Access to and within the Campus. Providing convenient access to and connections within the campus is crucially important to the successful operations of UCDHS. Within the areas of education and research, parking will move to the periphery in order to support a more pedestrian-friendly, auto-free environment similar to a traditional higher education campus. The Campus will continue to incorporate alternate means of transportation to and from the campus with a particular focus on the commute habits of faculty, staff, and students. The Campus will support improved transportation options such as working with RT to improve bus and light rail service to and near the campus, and identify potential improvements to Campus-operated shuttle systems. The Campus will implement appropriate alternate mode use incentives such as discounted transit passes; carpool matching services; preferential parking for carpools, vanpools and low emissions vehicles; and flexible car share programs for the campus. The Campus will also implement parking management policies, such as pricing, to encourage use of alternate modes. Finally the campus will encourage students in particular to live in close proximity of the campus to facilitate daily commuting.

Principle #4

Improve Pedestrian Connections throughout the Campus. All areas of the campus will be improved for better pedestrian access. The open space system of the connecting malls will provide the backbone of the connection system. Pedestrian walkways and tree-lined sidewalks will provide additional connections and will ensure easy and efficient ways to move throughout the campus without needing to drive.

Principle #5

Provide Attractive Campus Entries and Edges. Patient access will be focused at two street entry points: Stockton Boulevard and X Street, and Broadway and 50th Street. These entries will provide access to the Patient Care Boulevard, and will simplify access for patients all clinical destinations. In order to minimize impacts on surrounding neighborhoods, access to the campus for general traffic from V Street will be limited to only one location at 49th Street. Other existing entry

points at 45th and 48th Streets will be closed to general traffic with only service or emergency vehicles allowed.

Principle #6

Continue to Plan and Operate a Sustainable Campus. The University of California has been a leader in its sustainability practices. The Board of Regents directed the UC President to create a Policy on Sustainable Practices in 2003 which set ambitious goals to advance environmental practices. This policy continues to be updated. Recent reporting indicates that UC has achieved great advances in important areas of energy and waste. In addition UC has received recognition as a national leader in the full spectrum of sustainability areas and is considered among the top tier of “green universities.” The University is committed to developing a long term strategy for meeting the State’s goal of a reduction of greenhouse gas (GHG) emissions to 2000 levels by 2014, is further pursuing the goal of reducing GHG emissions to 1990 levels by 2020, and is developing an action plan for becoming carbon neutral.

4.2.4 IMPACTS AND MITIGATION MEASURES

4.2.4.1 Significance Criteria

The impacts from the implementation of the proposed project on air quality would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

The *State CEQA Guidelines* further state that the significance thresholds recommended by the applicable air quality management or air pollution control district may be relied on to make the determinations above. Therefore, to assess the project’s impact relative to the significance criteria listed above, air quality impact significance thresholds put forth by the SMAQMD have been used in this EIR. These thresholds

are contained in the SMAQMD's CEQA Guide. The SMAQMD's thresholds of significance for construction- and operational-related emissions are presented in **Table 4.2-2, SMAQMD Air Quality Impact Significance Thresholds**. If the proposed project's emissions would exceed any of the emission thresholds listed in **Table 4.2-2**, the impact from the emissions of the specific pollutant will be considered a significant impact.

**Table 4.2-2
SMAQMD Air Quality Impact Significance Thresholds**

Phase	SMAQMD Thresholds	
	Construction Phase	Operational Phase
Mass Emission Thresholds		
NOx (ozone precursor)	85 pounds per day	65 pounds per day
ROG (VOC) (ozone precursor)	None	65 pounds per day
PM10	Zero (0). If all feasible BACT/BMP's are applied; then 80 pounds per day and 14.6 tons per year	Zero (0). If all feasible BACT/BMP's are applied; then 80 pounds per day and 14.6 tons per year
PM2.5	Zero (0). If all feasible BACT/BMP's are applied; then 82 pounds per day and 15 tons per year	Zero (0). If all feasible BACT/BMP's are applied; then 82 pounds per day and 15 tons per year
Concentration Thresholds (based on the California Ambient Air Quality Standards, identical to both phases of development)		
CO	20 ppm 1-hour standard (23 mg/m ³); 9 ppm 8-hour standard (10 mg/m ³)	
NO ₂	0.18 ppm 1-hour standard (339 µg/m ³); 0.03 ppm Annual Arithmetic Mean (57 µg/m ³)	
SO ₂	0.25 ppm 1-hour standard (665 µg/m ³); 0.04 ppm 24-hour standard (105 µg/m ³)	
Lead	1.5 µg/m ³ 30-day average	
Visibility reducing particles	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more due to particles when relative humidity is less than 70 percent	
Sulfates	25 µg/m ³ 24-hour standard	
H ₂ S	0.03 ppm (42 µg/m ³) 1-hour standard	
Vinyl Chloride	0.01 ppm (26 µg/m ³) 24-hour standard	

Source: Sacramento Metropolitan Air Quality Management District, CEQA Guide. June 2015.

Mass emissions thresholds shown in **Table 4.2-2** are addressed through modeling using the most recent version of the California Emissions Estimator Model (CalEEMod). Concentration thresholds, reported in **Table 4.2-2**, are based on ambient air quality standards. These thresholds are applied if there is a

potential for the project to cause or contribute to violations of ambient air quality standards. NO_x emissions thresholds address a project's contribution to ground level ozone and nitrogen dioxide (NO₂) standards. Projects with mass emissions of NO_x below the mass emissions thresholds would not be considered to cause or contribute to violations of the NO_x concentration threshold. Other concentration thresholds in **Table 4.2-2** for carbon monoxide, sulfur dioxide, and lead are of less concern for the proposed project because construction activities are not likely to generate substantial quantities of these pollutants. As far as project operations are concerned, traffic is the primary source of emissions, which could affect ambient carbon monoxide concentrations, and the CO impacts are evaluated in this EIR relative to the concentration threshold for CO.

The SMAQMD's CEQA Guide also states that a project's impact would be considered significant if it results in:

- An incremental cancer risk greater than 10 in 1 million at any off-site receptor; or
- Ground-level concentration of project-generated TACs that would result in a Hazard Index greater than 1 at any off-site receptor.

4.2.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project and circulated with the NOP concluded that further analysis of the following issues was not required in the EIR.

- Create objectionable odors affecting a substantial number of people.

The proposed project would not produce unusual odors because the proposed redevelopment would not result in industrial processing, large-scale manufacturing operations such as food processing, agricultural waste processing, or storage of products with unusual odors. No impact would occur and no further analysis if required.

4.2.4.3 Methodology

The methodology used to evaluate the air quality impacts associated with construction and operation of the proposed project is based on the SMAQMD's CEQA Guide,⁹ the California Emissions Estimator Model (CalEEMod, version 2013.2.2), and the CalEEMod user guide. The construction emissions estimates are based on expected construction and demolition phasing schedules and equipment activity

⁹ Sacramento Metropolitan Air Quality Management District, "CEQA Guide to Air Quality Assessment," <http://www.airquality.org/ceqa/ceqaguideupdate.shtml> . June 2015.

levels. Emission calculations and air quality modeling conducted for the project are provided in **Appendix 4.2**.

While not a requirement of CEQA, the analysis of potential adverse air quality impacts in this EIR incorporates a conservative approach. This approach entails the premise that whenever the analysis requires that assumptions be made or default values be used, the assumptions and default values that result in the greatest reasonable adverse impacts are typically chosen. This method ensures that no potential effects of the proposed project are understated.

Construction-related emissions can be distinguished as either on site or off site. On-site emissions generated during construction principally consist of exhaust emissions (ROG, NO_x, CO, SO_x, PM₁₀, and PM_{2.5}) from the operation of heavy-duty construction equipment, fugitive dust (PM₁₀ and PM_{2.5}) from disturbed soil and building demolition, and ROG emissions from asphalt paving and architectural coating. Off-site emissions during the construction phase normally consist of exhaust emissions and entrained paved road dust (PM₁₀ and PM_{2.5}) from construction worker commute trips, material delivery trips, and haul truck material removal trips to and from the construction site.

4.2.4.4 LRDP EIR Mitigation Measures Included in the Proposed Project

Table 4.2-3, 2010 LRDP EIR Mitigation Measures, presents the mitigation measures in the 2010 LRDP EIR that are applicable to the proposed project. Since these previously adopted mitigation measures are already being carried out as part of implementation of the 2010 LRDP, they are included in and are a part of the proposed project and will not be readopted. Implementation of these mitigation measures is assumed as part of the project impact analysis.

Table 4.2-3
2010 LRDP EIR Mitigation Measures

Mitigation Measure	Description
LRDP Mitigation Measure AIR-1b	<p>For each construction project on the campus, the project contractor will implement the following PM₁₀ and PM_{2.5} control measures, as appropriate:</p> <ul style="list-style-type: none"> • Water exposed soil with adequate frequency to minimize fugitive dust. However, the contractor shall not overwater to the extent that sediment flows off the site. • Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 mph. • Install wind breaks (e.g., solid fencing) on windward side(s) of construction areas.

Mitigation Measure	Description
	<ul style="list-style-type: none"> • Plant vegetative ground cover in disturbed areas as soon as possible. Water appropriately until vegetation is established. • Prevent soil from leaving the construction site (e.g., install wheel washers for all exiting trucks, or wash off all trucks as equipment leaving the site; Treat site accesses to a distance of 100 feet from the paved road with a 6- to 12-inch layer of wood chips, mulch, or gravel to reduce generation of road dust carryout onto public roads). • Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the District shall also be visible to ensure compliance.
LRDP Mitigation Measure AIR-1b	<p>For each construction project on the campus, the University shall require that the project include a construction emissions control plan that includes a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used for an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine production year, and projected hours of use for each piece of equipment. The inventory shall be updated monthly throughout the duration of the project as needed, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. The plan will also include the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. The plan will also demonstrate that the heavy-duty (> 50 horsepower) self-propelled off-road equipment to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project-wide fleet-average 20 percent NOX reduction or greater and 45 percent particulate reduction or greater compared to the most recent CARB fleet average at the time of project construction. The University shall retain a copy of the construction emissions control plan on the campus, which will be made available to the agencies and the public upon request.</p>
LRDP Mitigation Measure AIR-4	<p>Because the bulk of the TAC emissions resulting in the significant human health risk operational impacts would be emitted by the existing and future stationary sources on the campus such as the Central Energy Plant boilers, and emergency generator testing, a number of potential mitigation measures were identified that focused on these stationary sources. These mitigation measures include the following:</p> <ul style="list-style-type: none"> • Limit fuel oil usage to 40 hrs/yr for the Building 34 emergency generator

Mitigation Measure	Description
	<ul style="list-style-type: none"> • Limit natural gas usage to 500,000 Therms per year (each) for existing Central Energy Plant boilers 1, 2, 3, and 4 • Limit natural gas usage to 500,000 Therms per year (each) for future Central Energy Plant boilers 1, 2, and 3 • Remove rain caps from the existing Central Plant boilers and replace with rain sleeves, while increasing overall stack height by 10 feet
LRDP Mitigation Measure AIR-6	The University will implement LRDP Mitigation Measure AIR-1 , which is designed to reduce construction emissions. It will also implement LRDP Mitigation Measure TRA-1 which will reduce traffic-related air pollutant emissions resulting from campus operations. For new and expanded stationary sources on the campus, the University will comply with BACT and offset requirements.
LRDP Cumulative Mitigation Measure AIR-1	The University will work with SACOG to ensure that campus growth is accounted for in the regional population and employment projections so that the emissions associated with campus growth can be accounted for in the regional air quality plans.

Source: UC Davis Sacramento Campus, 2010 LRDP EIR, Section 4.2, Air Quality.

4.2.4.5 Project Impacts and Mitigation Measures

Impact AIR-1: Construction of the proposed project would not result in construction emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation. (*Less than Significant*)

The proposed project would include demolition and construction activities from 2016 through 2021. While the intensity of the demolition and construction activities would vary depending on the details of each particular sequence, the activities are planned to sequentially follow one another with little overlap between the demolition and construction efforts. In total, through the six-year construction and demolition period, the proposed project would demolish 245,000 square feet of space (equivalent to 539,000 cubic feet of demolition materials), construct 130,000 square feet of new building space, develop two small pedestrian plaza areas, and reconstruct the west façade of the remaining hospital building. These activities are part of the demolition and construction efforts that were anticipated as part of the long-term development plan adopted in the 2010 LRDP for the UC Davis Sacramento Campus. To date, the development anticipated to occur under the 2010 LRDP has been less intense than planned in terms of new facilities and population growth.

The 2010 LRDP growth projections through the year 2025 were evaluated for potential air quality impacts in Section 4.2 of the 2010 LRDP EIR. Beginning on page 4.2-24, the 2010 LRDP EIR included analysis of anticipated demolition and construction air quality impacts. At the time of the 2010 LRDP, the project details for the Hospital Seismic Demolition and Office Replacement project were not known and the details (location, timing, and sizes) of other potential projects were not known. The 2010 LRDP EIR air quality analysis conducted demolition and construction air quality analysis based on the assumption that every three years of LRDP implementation would result in 1.33 million cubic feet of demolition effort, approximately 790,000 square feet of new building space, and additional construction for new parking facilities.

To develop an estimate of the maximum possible construction emissions that could result from the projected new development under the 2010 LRDP, it was assumed that there would be ongoing construction on the campus between 2011 and 2025, and that all the new building space proposed under the 2010 LRDP would be completely constructed by 2025. During this period, construction emissions of criteria pollutants and diesel particulate matter (DPM) would be generated by heavy-duty construction equipment, on-road trucks for material deliveries, and construction worker vehicles. ROG emissions would occur as a result of asphalt paving and architectural coatings. In addition, fugitive dust would be generated by grading and related activities. Based on this assumed rate of growth, the 2010 LRDP EIR then calculated (using the URBEMIS2007 modeling tool) potential demolition and construction emissions as described below. The amount of growth analyzed in the 2010 LRDP EIR emission projection in comparison to the currently proposed project are shown in **Table 4.2-4, Comparison of Prior LRDP EIR Analysis to Proposed Project**.

**Table 4.2-4
Comparison of Prior LRDP EIR Analysis to Proposed Project**

Activity Type	Six-Year Quantity in 2010 LRDP EIR Analysis	Quantity in Proposed Project and Currently Anticipated Projects
Demolition	2.66 million cubic feet	0.539 million cubic feet
Building Construction	1,580,000 square feet	130,000 square feet
Parking Construction	Approximately 500	Up to 12
Grading and Excavation	16 acres	Approximately 3 acres
Paving	Two acres	One acre

Source: 2010 LRDP EIR; Section 4.2.

¹ The 2010 LRDP EIR analysis included 1.33 million cubic feet and 790,000 square feet of building construction for every three-year period of LRDP implementation. The proposed project would take place over a six-year period and the quantity comparison expressed above provides LRDP EIR quantities for two, three-year periods.

² Air quality analysis included architectural coatings as an overlapping phase of Building Construction using URBEMIS2007 default assumptions. Asphalt paving for each phase was assumed to occur over four months overlapping with the last four months of the building construction.

Based on assumptions described above and URBEMIS2007 default assumptions, the URBEMIS2007 model was used in the 2010 LRDP EIR air quality analysis to estimate annual unmitigated and mitigated construction emissions of criteria pollutants from 2011 to 2025. The 2010 LRDP EIR projections identified that PM₁₀ and PM_{2.5} emissions would be of a sufficient level to likely result in ambient concentrations in the project area that would potentially exceed 5 percent of the CAAQS. Therefore, conservatively it was concluded in the 2010 LRDP EIR that construction emissions would result in a significant impact on air quality. With adoption of the 2010 LRDP EIR, the University committed to implementation of LRDP Mitigation Measures AIR-1a and AIR-1b detailed in **Table 4.2-3**, above. LRDP Mitigation Measures AIR-1a and AIR-1b require the University to reduce emissions (through items such as dust control and a construction equipment inventory process) during implementation of the LRDP and are currently required for all University projects (including the proposed project) at the Sacramento campus. The 2010 LRDP EIR projections of mitigated emissions over the six-year period corresponding to the duration of the proposed project are shown in **Table 4.2-5, Estimated Mitigated Construction Emissions from the 2010 LRDP EIR**.

**Table 4.2-5
Estimated Mitigated Construction Emissions from 2010 LRDP EIR**

Construction Year	Emissions in Pounds per Day					
	ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
2016	99.23	34.41	87.94	0.15	2.36	1.78
2017	7.46	40.96	88.90	0.15	48.36	10.87
2018	6.84	37.35	83.74	0.15	42.09	9.98
2019	97.77	26.42	73.14	0.15	1.94	1.39
2020	5.87	31.26	74.85	0.15	41.81	9.73
2021	5.26	27.57	60.73	0.15	41.69	9.62
Maximum Daily Emissions	101.16	71.21	133.70	0.15	49.26	11.70
SMAQMD Prior Threshold:	—	85	—	—	—	—
Exceeds Threshold?	—	NO	—	—	YES¹	YES¹
SMAQMD Current Threshold	—	85	—	—	80	82
Exceeds Current Threshold		NO			NO	NO

Source: 2010 LRDP EIR, Section 4.2.

Totals in the table may not appear to add exactly due to rounding in the computer model calculations.

¹ Shown as an exceedance of the prior SMAQMD prior threshold because although modeling of PM₁₀ and PM_{2.5} emissions was not conducted to estimate the concentrations of these pollutants, but based on the estimated mass emissions, conservatively the analysis concluded that the project generated PM₁₀ and PM_{2.5} emissions will likely exceed CAAQS for these pollutants by 5 percent at nearby sensitive receptors located in close proximity to construction activity. The 2010 LRDP EIR model results would not have exceeded the currently adopted SMAQMD threshold.

As shown in **Table 4.2-5**, while PM₁₀ and PM_{2.5} emissions would be reduced by the implementation of the mitigation measures noted above, emissions were projected to be a sufficient level to likely result in ambient concentrations in the project area that would still have exceeded the CAAQS for these pollutants at nearby receptors. Based on this analysis, the 2010 LRDP EIR identified the impact from construction and demolition emissions as significant. If the 2010 LRDP EIR model results of 49.26 pounds per day of PM₁₀ and 11.70 pounds per day of PM_{2.5} are compared to the current SMAQMD significance thresholds for particulate matter of 80 pounds per day of PM₁₀ and 82 pounds per day of PM_{2.5}, the impact from construction and demolition emissions would be less than significant.

To update the prior analysis conducted for the 2010 LRDP EIR using the now available, project-specific details, the California Emissions Estimator Model (CalEEMod), which is recommended by the SMAQMD, and the revised SMAQMD significance thresholds, a new analysis of construction emissions was completed. The project dates for each phase are shown in **Table 4.2-6**. The estimated daily and annual demolition and construction emissions for 2016 through 2021 are shown below in **Tables 4.2-7, 4.2-8, and 4.2-9**.

Table 4.2-6
2016 through 2021 Construction/Demolition Phase Details

Phase	Phase Details		
	Facility	Modeled Start Date	Modeled End Date
Demolition 1	Housestaff Demolition	2/1/2016	2/19/2016
Site Preparation	North Addition	3/1/2016	3/14/2016
Grading and Excavation	North Addition	3/15/2016	3/28/2016
Construction	North Addition	6/1/2016	6/1/2018
Paving	North Addition	6/1/2018	6/4/2018
Architectural Coatings	North Addition	3/15/2018	4/15/2018
Demolition 2.1	North/South Wing Abatement and Demolition Preparation	12/1/2019	4/29/2020
Demolition 2.2	North/South Wing Demolition	5/1/2020	7/20/2020

Note: During each period, model projections included 5 working days per week.

Table 4.2-7
Estimated Maximum Daily Construction Emissions-Winter

Construction Year	Emissions in Pounds per Day								
	ROG	NO _x		CO	SO _x	PM ₁₀		PM _{2.5}	
		Model Output	Less 20%			Model Output	Less 45%	Model Output	Less 45%
2016	5.6	61.7	49.7	42.8	0.06	9.8	8.5	6.4	5.2
2017	2.7	23.0	18.8	22.1	0.03	1.9	1.3	1.5	0.9
2018	91.1	34.6	30.9	34.6	0.05	2.6	2.1	2.0	1.5
2019	1.9	20.8	16.7	21.1	0.04	1.4	1.0	0.96	0.6
2020	7.0	77.3	63.2	51.2	0.12	5.2	4.0	3.0	1.9
Maximum Emissions in Any Day	91.1	77.3	63.2	51.2	0.12	9.8	8.5	6.4	5.2
SMAQMD Threshold:	—	85	85	—	—	80	80	80	80
Exceeds Threshold?	—	NO	NO	—	—	NO	NO	NO	NO

Source: CalEEMod model output. Output tables provided in Appendix 4.2..

Totals in the table may not appear to add exactly due to rounding in the computer model calculations.

¹ Notes: Model Output amount shown in comparison to the "Less 20%" for NO_x and "Less 45%" for PM. Respectively, these include reductions from all feasible BACT/BMP's (previously adopted as LRDP Mitigation Measure AIR-1a). For NO_x, PM₁₀, and PM_{2.5}, the model projection is reported first with a reduction of 20% of the on-site off-road equipment shown for NO_x and 45% shown for PM from consideration of "Enhanced Exhaust Control Practices" (previously adopted as LRDP Mitigation Measure AIR-1b). Appendix 4.2-1, page 1 includes a detailed explanation of the NO_x and PM Enhanced Exhaust Control Practices deductions.

Table 4.2-8
Estimated Maximum Daily Construction Emissions-Summer

Construction Year	Emissions in Pounds per Day								
	ROG	NO _x		CO	SO _x	PM ₁₀		PM _{2.5}	
		Model Output	Less 20%			Model Output	Less 45%	Model Output	Less 45%
2016	5.5	61.5	49.5	42.4	0.06	9.7	8.4	6.4	5.2
2017	2.7	22.8	18.6	20.9	0.03	1.9	1.3	1.5	0.9
2018	91.1	34.4	30.7	32.9	0.05	2.6	2.1	2.0	1.5
2019	1.9	20.7	16.6	21.1	0.04	1.4	1.0	1.0	0.6
2020	6.9	76.7	62.6	47.6	0.12	5.2	4.0	3.0	1.9
Maximum Emissions in Any Day	91.1	76.7	62.6	47.6	0.12	9.7	8.4	6.4	5.2
SMAQMD Threshold:	—	85	85	—	—	80	80	80	80

Construction Year	Emissions in Pounds per Day								
	ROG	NO _x		CO	SO _x	PM10		PM2.5	
		Model Output	Less 20%			Model Output	Less 45%	Model Output	Less 45%
Exceeds Threshold?	—	NO	NO	—	—	NO	NO	NO	NO

Source: CalEEMod model output. Output tables provided in Appendix 4.2.

Totals in the table may not appear to add exactly due to rounding in the computer model calculations.

¹ Notes: Reported amounts include reductions from all feasible BACT/BMP's (previously adopted as LRDP Mitigation Measure AIR-1a). For NO_x, PM10, and PM2.5, the model projection is reported first with a reduction of 20% of the on-site off-road equipment shown for NO_x and 45% shown for PM from consideration of "Enhanced Exhaust Control Practices" (previously adopted as LRDP Mitigation Measure AIR-1b). Appendix 4.2, page 1 includes a detailed explanation of the NO_x and PM Enhanced Exhaust Control Practices deductions.

Table 4.2-9
Estimated Annual Mitigated Construction Emissions

Construction Year	Emissions in Tons per Year						
	ROG	NO _x	CO	SO _x	PM10	PM2.5	
2016	0.2895	2.5915	2.1513	--	0.2118	0.1632	
2017	0.3490	2.9817	2.7511	--	0.2452	0.1889	
2018	1.1045	1.1437	1.1486	--	0.0936	0.0700	
2019	0.0204	0.2281	0.2306	--	0.0153	0.0105	
2020	0.2721	3.0152	2.2762	--	0.2004	0.1224	
Maximum Annual Emissions	1.1045	3.01	2.7511	negligible	0.2452	0.1889	
SMAQMD Threshold:	—	—	—	—	14.6	15	
Exceeds Threshold?	—	—	—	—	NO	NO	

Source: CalEEMod model output. Output tables provided in Appendix 4.2.

Totals in the table may not appear to add exactly due to rounding in the computer model calculations.

The CalEEMod results indicate that the NO_x and particulate matter emissions from demolition and construction activities of the proposed project would not exceed the SMAQMD daily or annual thresholds for these pollutants during any of the implementation years. With anticipated emissions projected to remain below the significance thresholds, the expected impact of demolition and construction emissions would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Impact AIR-2: The proposed project would not result in operational emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation. (No Impact)

The proposed project would result in decreased operational emissions with the anticipated net decrease of 130,000 square feet of building space at the Sacramento campus. The proposed project includes the closure and demolition of 245,000 square feet of building space in the North/South Wing and the Housestaff Building. These buildings were built prior to the adoption of energy code requirements and are considered to not provide a high level of energy efficiency on a per square foot basis. The proposed North Addition Office Building, which would provide replacement space for the programs located in the buildings to be demolished, would be constructed to meet the UC equivalent LEED® Gold certification or better standard. It would thereby achieve higher energy efficiency on a per square foot basis than the existing space proposed for closure. A rough calculation comparing the electricity and natural gas demand for the proposed building in comparison to the existing buildings indicates an electricity demand decrease of approximately 78% (a demand reduction of approximately 3,379,000 kw/year) and a natural gas demand decrease of approximately 82% (a demand reduction of approximately 155,900 therms per year). The proposed project would include no increase to the campus population and the North Addition Office Building would include no laboratory space or other energy intensive uses. With completion of the proposed project, the operational emissions would not increase compared to existing conditions. No impact would occur.

Mitigation Measures: No project-level mitigation measures are required.

Impact AIR-3: Implementation of the proposed project would not expose sensitive receptors to substantial concentrations of carbon monoxide. (Less than Significant)

The proposed project would result in an increase in trips generated in and around the project site. The SMAQMD's CEQA Guide provides lead agencies with a conservative indication of whether project-generated vehicle trips would result in the generation of CO emissions that would contribute to an exceedance of the CAAQS. Two tiers have been created by SMAQMD as screening criteria for lead agencies to analyze potential CO impacts and identify when site-specific CO dispersion modeling is necessary. If the first tier of screening criteria is not met then the second tier of screening criteria is examined. The first and second tier screening criteria are as follows:

First Tier: The proposed project would result in a less than significant impact related to localized emissions of CO if:

- Traffic generated by the proposed project would not result in deterioration of intersection level of service (LOS) to LOS E or F; or

- The project would not contribute additional traffic to an intersection that already operates at LOS of E or F.

Second Tier: If all of the following criteria are met, the proposed project would result in a less than significant impact related to localized emissions of CO if:

- The project would not result in an affected intersection experiencing more than 31,600 vehicles per hour;
- The project would not contribute traffic to a tunnel, parking garage, bridge underpass, urban street canyon, or below-grade roadway; or other locations where horizontal or vertical mixing of air would be substantially limited; and
- The mix of vehicle types at the intersection is not anticipated to be substantially different from the county average (as identified by the EMFAC or URBEMIS models).

The proposed project would not increase the traffic on the nearby road network in the long run because the campus population and associated vehicle trips would not increase with the proposed project. The proposed project would however add varying amounts of construction vehicle traffic to the road network for the duration of demolition and construction (a period of about 6 years). This traffic would be added to intersections already operating at LOS F without the project. Therefore, the project would not meet the first tier of the screening criteria presented above. When the first tier is not met, the SMAQMD requires an examination of the second tier. During peak activities, such as the demolition of the North/South Wing, the proposed project's construction traffic would not exceed 100 vehicles a day. Therefore, the project would add vehicles to the affected intersections at a rate much less than the significance threshold of 31,600 vehicles per hour. In addition, the area near the project site does not include tunnels, bridge underpasses, urban street canyons, or below-grade roadways that would substantially hamper horizontal or vertical mixing of air. Therefore, the project would not contribute traffic to a tunnel, parking garage, bridge underpass, urban street canyon, or below-grade roadway where horizontal or vertical mixing of air would be substantially limited and the increase that would result would be much less than the 31,600 vehicles per hour indicator. Therefore, the project meets the second tier screening criteria and CO concentrations would not be expected to exceed the SMAQMD significance threshold for CO and would not result in the formation of CO hotspots. Implementation of the proposed project would have a less than significant impact on air quality with respect to this criterion.

Mitigation Measures: No project-level mitigation measures are required.

Impact AIR-4: Implementation of the proposed project would not expose sensitive receptors to substantial concentrations of toxic air contaminants. (*Less than Significant*)

Toxic air contaminants (TACs) consist primarily of reactive organic gases, such as benzene and formaldehyde, polycyclic aromatic hydrocarbons, such as benzo(a)pyrene-10 and dibenz(a,h)anthracene-10, and metals, such as arsenic and lead. Diesel particulate matter (DPM) from diesel-fueled engines has also been identified by CARB as a TAC defined under Section 39655 of the Health and Safety Code.

The potential for project-related TACs to affect human health is typically assessed in terms of an increase in cancer risk and non-cancer health effects. The SMAQMD has established a threshold for evaluating human health risk impacts from TACs, which is based on an incremental increase in cancer risk. A project is considered to have a less than significant impact in terms of lifetime cancer risk, if the project would result in a maximum increase of no more than 10 in 1 million in the risk of contracting cancer during a lifetime of exposure to a project's TAC emissions at any one receptor.

Potential non-cancer health effects are assessed by use of a "Hazard Index," which is the sum of the ratios of each chemical's hazard quotient (the hazard quotient is determined for each chemical by comparing the modeled exposure level at a particular receptor location to the acceptable exposure level for that chemical; in other words, a hazard quotient is the fraction of a non-cancer health effects threshold, for a particular contaminant, experienced by a person at a particular location). Hazard indices are calculated for both long-term (chronic) and short-term (acute) health effects, and a separate hazard index is calculated for each target organ group affected by the TACs being assessed. According to SMAQMD, a hazard index (HI) of 1.0 or less indicates that no adverse non-cancer health effects would be anticipated.

The Sacramento Campus conducted a comprehensive human health risk assessment (HHRA) to assess health risks (cancer risks and non-cancer health hazards) associated with full development of the campus under the 2010 LRDP by estimating both the lifetime cancer risk and hazard indices (Golder 2010). The HHRA evaluated emission impacts of TACs from ongoing health care, education, research, and associated operations activities. To evaluate the campus's operational impacts, the HHRA included all existing and future TAC emissions associated with hospital and clinical uses, educational/research laboratories, the Central Energy Plant, natural gas and diesel fired stationary combustion sources (including routine firing of back-up emergency generators for testing and maintenance), and other sources (e.g., painting operations, solvent cleaning operations, facility-owned mobile sources, delivery vehicles, waste solvent handling, etc.). In addition, the HHRA included emissions from demolition/construction equipment as contributors to TAC emissions during LRDP implementation. The HHRA components and methodology and results are described in the **Section 4.2 of the 2010 LRDP EIR**

beginning on page 4.2-36 with additional methodology and assumptions presented in the Human Health Risk Assessment for the University of California Davis Sacramento Campus 2010 Long Range Development Plan (Golder 2010). The proposed project is a component of the overall implementation of the 2010 LRDP and the on-going operations of the Sacramento campus which collectively contribute to TAC emissions. **Table 4.2-10** summarizes the human health effects on worker and resident MEI locations from campus operations (including on-going construction) at full development under the 2010 LRDP.

Table 4.2-10
Maximum Cancer Risk and Chronic Hazard for LRDP Operations

Receptor Type	Lifetime Excess Cancer Risk	Chronic Hazard Index	Acute Hazard Index
Worker MEI	12 in a million	1.8	2.4
Resident MEI	12 in a million	0.3	1.2
SMAQMD Project Level Threshold	10 in a million	1.0	1.0

Bold font indicates a significant impact.

Impacts on Residential Receptors

The maximum LECR from total operations (current operations plus additional development on the campus under the 2010 LRDP) at residential receptor locations (all of which are off of the campus site) was calculated to be 12 in 1 million at the northern campus boundary along V Street. This value exceeds the significance threshold of 10 in 1 million and represents a significant impact. Most of the estimated risk at this location is due to DPM emissions from the five existing generators at the Central Energy Plant and the new generator at Building 34. Campus non-laboratory stationary source emissions comprise 93 percent of the risk at the MEI, and all other campus sources combined contribute 7 percent.

The maximum chronic HI from total operations at residential receptor locations was calculated to be 0.3. This value is below the significance threshold of an HI of 1 or less and represents a less than significant impact.

The maximum acute HI from total operations at residential receptor locations was calculated to be 1.2, just off-campus and east of the Central Energy Plant. This value exceeds the significance threshold of an HI of 1 or less and represents a significant impact. Most of the acute hazard was estimated to be due to arsenic and mercury emissions from the four existing boilers (from trace amounts of arsenic and mercury in the natural gas and diesel fuels used), as well as formaldehyde emissions from these boilers.

Impacts on Non-Residential Receptors

The human health effects from total campus operations (current operations plus additional development on the campus under the 2010 LRDP and ongoing construction activities) were also calculated at all on-campus locations and some off-campus locations with occupational worker exposure parameters (this includes locations where the exposed population is present during the course of the day but is not present at night and does not permanently reside at that location). The maximum lifetime cancer risk for the non-residential MEI was calculated to be 12 in 1 million at just north of the existing Central Energy Plant. This value exceeds the significance threshold of 10 in 1 million and represents a significant impact. Most of the estimated risk at this location is due to DPM emissions from the five existing generators at the Central Energy Plant and arsenic and other toxic metals emissions from the four existing boilers at the Central Energy Plant (from trace amounts of arsenic and other metals in the natural gas and diesel fuels used). Campus non-laboratory stationary source emissions comprise 95 percent of the risk at the MEI, and all other campus sources combined contribute 5 percent.

The maximum chronic HI from total operations at locations with occupational worker exposure parameters was calculated to be 1.8 near the existing Central Energy Plant on campus. This value exceeds the significance threshold of an HI of 1 or less and represents a significant impact. Most of the chronic hazard was estimated to be due to arsenic emissions from the four existing boilers (from trace amounts of arsenic in the natural gas and diesel fuels used).

The maximum acute HI from total operations at locations with the most occupational worker exposure parameters was calculated to be 2.4 near the existing Central Energy Plant on campus. This value exceeds the significance threshold of an HI of 1 or less and represents a significant impact. Most of the acute hazard was estimated to be due to arsenic and mercury emissions from the four existing boilers (from trace amounts of arsenic and mercury in the natural gas and diesel fuels used), as well as formaldehyde emissions from these boilers.

Given the proximity of the campus to Marian Anderson School (now closed), the human health risk impacts were specifically calculated for this non-residential receptor. Although the Marian Anderson School is now closed, the maximum lifetime cancer risk was calculated to be 2.7 in a million, the chronic HI was estimated to be 0.5, and the acute HI was estimated to be 1.2. The first two values are below the significance thresholds. However, the estimated acute HI for the school exceeds the significance threshold of an HI of 1 or less and represents a significant impact.

In summary, the total estimated cancer risk and non-cancer human health risk from the operation phase of the 2010 LRDP were predicted to exceed the significance thresholds, and the impact from campus

operations (including on-going construction) was considered significant. The proposed project, as a component of implementing the 2010 LRDP, represents a contribution to this overall risk. Therefore **LRDP Mitigation Measure AIR-4** (limiting emissions from emergency power generation and from Central Plant boilers) which was adopted for the 2010 LRDP EIR and is being implemented, is applicable to the proposed project and reduces TAC emissions to a less-than-significant level as shown below in **Table 4.2-11**. Note that the reductions in impacts from the inclusion of LRDP mitigation measures other than **LRDP Mitigation Measure AIR-4** (e.g., **LRDP Mitigation Measure AIR-1b**) are not included in the estimates reported in **Table 4.2-11**.

Table 4.2-11
Maximum Cancer Risk and Chronic Hazard for Mitigated LRDP Operations

Receptor Type	Lifetime Excess Cancer Risk	Chronic Hazard	Acute Hazard
Residential MEI	9.1 in a million	0.14	0.59
Non-Residential MEI	8.2 in a million	0.32	0.89
Marian Anderson School	1.4 in a million	0.17	0.79
SMAQMD Project Level Threshold	10 in a million	1.0	1.0

With the continued implementation of **LRDP Mitigation Measure AIR-4**, the cancer risk for all receptor types would be less than the significance threshold of 10 in 1 million, and the chronic and acute hazard indices would similarly be less than a value of 1.0. The impact of the proposed project would be less than significant.

Measures to reduce exposure of sensitive receptors to construction emissions are included in the project. The HHRA did not include the effect of these measures. **LRDP Mitigation Measure AIR-1b** requires that the University implement a construction emissions control plan that includes a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used for an aggregate of 40 or more hours during any portion of the construction project. This plan must demonstrate that the heavy-duty self-propelled off road equipment to be used in the construction project will achieve a project-wide fleet-average 45 percent particulate matter emissions reduction or greater compared to the most recent CARB fleet average at the time of project construction. Exhaust particulate matter emissions from diesel-powered equipment is the primary TAC emitted during construction and demolition activities. The emissions control plan will substantially reduce the TAC emissions.

Mitigation Measures: No project-level mitigation measures are required.

Impact AIR-5: **Implementation of the proposed project would not conflict with or obstruct implementation of the applicable air quality plan. (*Less than Significant*)**

In compliance with the *State CEQA Guidelines*, this EIR evaluates whether the proposed project would conflict with or otherwise obstruct implementation of regional air quality plans. For air quality planning purposes, the SMAQMD creates emissions inventories based on existing and foreseeable future land uses within its jurisdiction. If a new project is consistent with the planned land use designation that was considered in the development of an air quality management plan, the proposed project would not conflict and would not obstruct implementation of the applicable air quality management plan. Generally, a project's conformance with a local general plan that was taken into account in the preparation of an air quality management plan would demonstrate that the project would not conflict with or obstruct implementation of the air quality management plan. Although the City's General Plan identifies the campus site for its current and proposed uses, the campus growth under the 2010 LRDP was not accounted for in the City's General Plan projections for employment and population growth or in the SACOG growth projections for the region. As described in **Impact AIR-2** above, the campus population and building space is not projected to grow under the proposed project and operational emissions would not increase as a result of the project. Therefore, the operation of the proposed project would not conflict with the region's air quality plan.

As described in **Impact AIR-1** above, the demolition and construction activities associated with the proposed project are forecast to remain below the SMAQMD thresholds for each phase of the project occurring during the years 2016 through 2021. Therefore, the demolition/construction activities are also not expected to interfere with the regional air quality plan. The potential impact would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

4.2.4.6 Cumulative Impacts and Mitigation Measures

Cumulative Impact AIR-1: **Implementation of the proposed project would not result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard. (*Less than Significant*)**

The SMAQMD's CEQA Guide considers a project's impact on air quality to be a largely cumulative impact. According to the SMAQMD, given past, current, and future development projects within the SMAQMD's jurisdiction, and given the current nonattainment status of the Sacramento County portion of the SVAB for ozone, PM₁₀, and PM_{2.5}, a significant air quality impact already exists.¹⁰

In general, the SMAQMD states that if a project's individual emissions are less than the project-level thresholds of significance, the project would not result in a cumulatively considerable adverse contribution to the region's existing air quality conditions. In addition, an exceedance of the project-level thresholds does not necessarily constitute a significant cumulative impact. Emissions from a project that is consistent with the regional air quality management plans and clean air plans would not be considered cumulatively considerable even though the emissions exceed the project-level thresholds. This is because the emissions would be accounted for in the region's growth projections and emissions budget contained in the SIP.

The emissions budget in the SIP includes a provision for on-going construction emissions. Projects that result in construction emissions below project-level thresholds are considered to be accounted for in the regional plan because their emissions are small enough to be captured in the construction emissions budget included in the plan. As demonstrated in **Impact AIR-1** above, the project's individual emissions during construction are less than the project-level thresholds of significance set forth by the SMAQMD. Therefore, the project's construction emissions are accounted for in the emissions budget and the project would not conflict with the regional air quality plan nor result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard. The impact from project construction would be less than significant.

With respect to operational emissions, **LRDP Impact AIR-6** in the 2010 LRDP EIR analyzed the potential for all of campus growth under the 2010 LRDP to result in a net increase of criteria pollutants for which the air basin was in nonattainment and concluded that the campus' growth is not accounted for in the regional population and employment projections, and therefore the air emissions associated with that growth are also not accounted for in the regional air quality planning efforts. Consequently, the operational emissions associated with campus growth under the 2010 LRDP had the potential to set back regional air quality planning efforts and result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment. To address this, the University adopted **LRDP Cumulative MM AIR-1** (for the University work with SACOG to ensure that campus growth is accounted for in the regional population and employment projections) to improve regional air quality

¹⁰ Sacramento Metropolitan Air Quality Management District, *Guide to Air Quality Assessment in Sacramento County* (2009) 8-1.

attainment planning. However, because the campus's future emissions are not as yet accounted for in the regional air quality plans, the impact would still be significant until campus growth is added to the plans. The proposed project would, however, not contribute to this significant cumulative impact identified in the 2010 LRDP EIR. This is because, as noted in **Impact AIR-2** above, the campus population and building space is not projected to grow under the proposed project and operational emissions would not increase as a result of the project. The impact would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Cumulative Impact AIR-2: **Construction and operation of the proposed project, in conjunction with other nearby TAC sources, would not expose sensitive receptors to substantial concentrations of toxic air contaminants. (*Less than Significant*)**

In addition to evaluating the direct impact of TACs from campus operations at full campus development under the 2010 LRDP (**LRDP Impact AIR-4** described above), an additional cumulative analysis was conducted in the 2010 LRDP EIR that included TAC emissions emitted not only from the campus' existing and future operational and construction TAC sources, but also emissions from other off-campus sources near the campus. At the time that the 2010 LRDP EIR was prepared, the SMAQMD did not have specific guidance as to how the cumulative impacts of a project may be evaluated or what thresholds may be used to evaluate the cumulative impacts. Therefore, the approach to the cumulative impact analysis and the significance threshold for evaluating the cumulative impact was obtained from the guidance adopted by the Bay Area Air Quality Management District (BAAQMD) in June 2010 to determine that that cumulative impact of campus emissions through full implementation of the 2010 LRDP would be less than significant.

The SMAQMD now provides guidance for evaluating the cumulative impact from TAC emissions and states that because the District's threshold of significance for health risk exposure from TACs is based on the incremental increase in health risk from a project's TAC emissions, the District considers implementation of the project-level mitigation requirements to be sufficient for a finding of a less than cumulatively considerable contribution to the cumulative impacts of TACs. Therefore, the cumulative impact would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

4.2.5 REFERENCES

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4.3 GREENHOUSE GAS EMISSIONS

4.3.1 INTRODUCTION

This section discusses the existing global, national, and statewide conditions related to greenhouse gases (GHG) and global climate change and evaluates the potential impacts on global climate from the implementation of the proposed Hospital Seismic Demolition and Office Replacement project (proposed project). The section also provides discussion of the applicable federal, state, regional, and local agencies that regulate, monitor, and control GHG emissions. The impacts associated with the proposed project are compared with the thresholds of significance and significance criteria established by the Sacramento Metropolitan Air Quality Management District (SMAQMD). Copies of the modeling runs to estimate GHG emissions associated with the proposed project and supporting technical data are found in **Appendix 4.2** of this EIR.

No comments related to GHG emissions were received in response to the Notice of Preparation (NOP) issued for this EIR. All comment letters received in response to the NOP are provided in **Appendix 1.0** of this Draft EIR.

4.3.2 EXISTING CONDITIONS

4.3.2.1 Site Setting

The proposed project consists of the three sites at the UC Davis Sacramento campus described in Section 3.0. These sites are developed portions of the medical center campus and currently include 255,000 square feet of building space. Potential GHG emissions associated with the current site include the emissions associated with the ventilation, heating, cooling, and lighting of the building interiors. In addition, existing emissions include the emissions associated with the operations and maintenance of these facilities, including direct and indirect emissions resulting from water, wastewater, solid waste from existing operations, exterior landscaping emissions, and mobile emissions associated with existing employees at the medical center. The proposed project includes the replacement of the existing building square footage with new facilities that would provide 130,000 square feet of space rather than the existing 255,000 square feet of space. With the relocation of the existing activities from the space proposed for demolition into the new space, the project includes no changes to expected employment or visitor trips to the Sacramento campus.

4.3.2.2 Background

Global climate change refers to any significant change in climate measurements, such as temperature, precipitation, or wind, lasting for an extended period (i.e., decades or longer) (US EPA 2008a). Climate change may result from:

- natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- natural processes within the climate system (e.g., changes in ocean circulation, reduction in sunlight from the addition of GHG and other gases to the atmosphere from volcanic eruptions); and
- human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification).

The primary effect of global climate change has been a rise in the average global tropospheric temperature of 0.2 degree Celsius per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using 2000 emission rates shows that further warming is likely to occur, which would induce further changes in the global climate system during the current century (IPCC 2007). Changes to the global climate system and ecosystems, and to California, could include:

- declining sea ice and mountain snowpack levels, thereby increasing sea levels and sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures (IPCC 2007);
- rising average global sea levels primarily due to thermal expansion and the melting of glaciers, ice caps, and the Greenland and Antarctic ice sheets (model-based projections of global average sea level rise at the end of the 21st century (2090–2099) range from 0.18 meter to 0.59 meter or 0.59 foot to 1.94 feet) (IPCC 2007);
- changing weather patterns, including changes to precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones (IPCC 2007);
- declining Sierra snowpack levels, which account for approximately half of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years (Cal EPA 2006);
- increasing the number of days conducive to ozone formation by 25 to 85 percent (depending on the future temperature scenario) in high ozone areas located in the Southern California area and the San Joaquin Valley by the end of the 21st century (Cal EPA 2006);
- increasing the potential for erosion of California's coastlines and sea water intrusion into the Sacramento and San Joaquin Delta and associated levee systems due to the rise in sea level (California EPA 2006);

- increasing pest infestation, making California more susceptible to forest fires (Cal EPA 2006);
- increasing the demand for electricity by 1 to 3 percent by 2020 due to rising temperatures resulting in hundreds of millions of dollars in extra expenditures (Cal EPA 2006); and
- summer warming projections in the first 30 years of the 21st century ranging from about 0.5 to 2 degrees Celsius (°C) (0.9 to 3.6 °F) and by the last 30 years of the 21st century, from about 1.5 to 5.8 °C (2.7 to 10.5 °F) (Cal EPA 2006).

The natural process through which heat is retained in the troposphere¹ is called the “greenhouse effect.” The greenhouse effect traps heat in the troposphere through a threefold process as follows: (1) short-wave radiation in the form of visible light emitted by the Sun is absorbed by the Earth as heat; (2) long-wave radiation re-emitted by the Earth; and (3) GHGs in the upper atmosphere absorbing or trapping the long-wave radiation and re-emitting it back towards the Earth and into space. This third process is the focus of current climate change actions.

While water vapor and carbon dioxide (CO₂) are the most abundant GHGs, other trace GHGs have a greater ability to absorb and re-radiate long-wave radiation. To gauge the potency of GHGs, scientists have established a Global Warming Potential (GWP) for each GHG based on its ability to absorb and re-emit long-wave radiation over a specific time period. The GWP of a gas is determined using CO₂ as the reference gas, which has a GWP of 1 over 100 years (IPCC 1996).² For example, a gas with a GWP of 10 is 10 times more potent than CO₂ over 100 years. The use of GWP allows GHG emissions to be reported using CO₂ as a baseline. The sum of each GHG multiplied by its associated GWP is referred to as “carbon dioxide equivalents” (CO₂e). This essentially means that 1 metric ton of a GHG with a GWP of 10 has the same climate change impacts as 10 metric tons of CO₂.

4.3.2.3 Greenhouse Gases

State law defines GHGs to include the following compounds:

- **Carbon Dioxide (CO₂).** Carbon dioxide primarily is generated by fossil fuel combustion from stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources over the past 250 years, the concentration of carbon dioxide in the atmosphere has increased 35 percent (US EPA 2008b). Carbon dioxide is the most widely emitted GHG and is the reference gas (GWP of 1) for determining the GWP of other GHGs. In 2004, 82.8 percent of California’s GHG emissions were carbon dioxide (California Energy Commission 2007).
- **Methane (CH₄).** Methane is emitted from biogenic sources (i.e., resulting from the activity of living organisms), incomplete combustion in forest fires, landfills, manure management, and leaks in

¹ The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth’s surface to 10 to 12 kilometers).

² All Global Warming Potentials are given as 100-year values.

natural gas pipelines. In the United States, the top three sources of methane are landfills, natural gas systems, and enteric fermentation (US EPA n.d.[a]). Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The GWP of methane is 21.

- **Nitrous Oxide (N₂O).** Nitrous oxide is produced by natural and human-related sources. Primary human-related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of nitrous oxide is 310.
- **Hydrofluorocarbons (HFCs).** HFCs typically are used as refrigerants in both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam-blowing is growing particularly as the continued phase-out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The GWP of HFCs ranges from 140 for HFC-152a to 6,300 for HFC-236fa.
- **Perfluorocarbons (PFCs).** Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. Perfluorocarbons are potent GHGs with a GWP several thousand times that of carbon dioxide, depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime (up to 50,000 years) (Energy Information Administration 2007). The GWPs of PFCs range from 5,700 to 11,900.
- **Sulfur Hexafluoride (SF₆).** Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride is the most potent GHG that has been evaluated by the Intergovernmental Panel on Climate Change with a GWP of 23,900. However, its global warming contribution is not as high as the GWP would indicate due to its low mixing ratio, as compared to carbon dioxide (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm] of CO₂) (US EPA n.d.[b]).

4.3.2.4 Contributions to Greenhouse Gas Emissions

Global

Worldwide anthropogenic (man-made) GHG emissions are tracked for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Man-made GHG emissions for Annex I nations are available through 2007. Man-made GHG emissions for Non-Annex I nations are available through 2005. The sum of these emissions totaled approximately 42,133 million metric tons of CO₂ equivalents (MMTCO₂E).³ It should be noted that global emissions inventory data are not all from the

³ The CO₂ equivalent emissions commonly are expressed as “million metric tons of carbon dioxide equivalent (MMTCO₂E).” The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP, such that MMTCO₂E = (million metric tons of a GHG) × (GWP of the GHG). For example, the GWP for methane is 21. This means that the emission of one million metric tons of methane is equivalent to the emission of 21 million metric tons of CO₂.

same year and may vary depending on the source of the emissions inventory data.⁴ The top five countries and the European Union accounted for approximately 55 percent of the total global GHG emissions according to the most recently available data (See **Table 4.3-1, Top Five GHG Producer Countries and the European Union [Annual]**). The GHG emissions in more recent years may differ from the inventories presented in **Table 4.3-1**; however, the data is representative of currently available global inventory data.

**Table 4.3-1
Top Five GHG Producer Countries and the European Union (Annual)**

Emitting Countries	GHG Emissions (MMTCO_{2e})
China	7,250
United States	7,217
European Union (EU), 27 Member States	5,402
Russian Federation	2,202
India	1,863
Japan	1,412
Total	25,346

Source: World Resources Institute, "Climate Analysis Indicators Tool (CAIT)," <http://cait.wri.org/>. 2010. Excludes emissions and removals from land use, land-use change and forestry (LULUCF).

Note: Emissions for Annex I nations are based on 2007 data. Emissions for Non-Annex I nations (e.g., China, India) are based on 2005 data).

United States

As noted in **Table 4.3-1**, the United States was the number two producer of global GHG emissions as of 2005. The primary GHG emitted by human activities in the United States was CO₂, representing approximately 84 percent of total GHG emissions (US EPA 2008a). Carbon dioxide from fossil fuel combustion, the largest source of GHG emissions, accounted for approximately 80 percent of U.S. GHG emissions.⁵

⁴ The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2005 data, the UNFCCC data for the most recent year were used. United Nations Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF," http://unfccc.int/ghg_emissions_data/ghg_data_from_unfccc/time_series_annex_i/items/3841.php and "Flexible GHG Data Queries" with selections for total GHG emissions excluding LULUCF/LUCF, all years, and non-Annex I countries, <http://unfccc.int/di/FlexibleQueries/Event.do?event=showProjection>. n.d.

⁵ *Supra* no. 4.

State of California

The California Air Resources Board compiles GHG inventories for the State of California. Based upon the 2006 GHG inventory data (i.e., the latest year for which data are available) for the 2000–2006 GHG emissions inventory, California emitted 484 MMTCO_{2e} *including* emissions resulting from imported electrical power in 2006 (CARB 2009). Based on the CARB inventory data and GHG inventories compiled by the World Resources Institute, California’s total statewide GHG emissions rank second in the United States (Texas is number one) with emissions of 434 MMTCO_{2e} *excluding* emissions related to imported power (CARB 2009).

A California Energy Commission (CEC) emissions inventory report placed CO₂ produced by fossil fuel combustion in California as the largest source of California’s GHG emissions in 2004, accounting for 80 percent of the total GHG emissions (California Energy Commission 2006a). Emissions of CO₂ from other sources contributed 3.1 percent of the total GHG emissions; methane emissions 6.4 percent; nitrous oxide emissions 7.6 percent; and the remaining 3.2 percent was composed of emissions of high-GWP gases (California Energy Commission 2006a). These high GWP gases are largely composed of refrigerants, with small contributions of SF₆ used in connection with insulating materials for electricity transmission and distribution.

4.3.3 REGULATORY FRAMEWORK

4.3.3.1 Intergovernmental Panel on Climate Change

The World Meteorological Organization (WMO) and United Nations Environmental Program (UNEP) established the IPCC in 1988. The goal of the IPCC is to evaluate the risk of climate change caused by human activities. Rather than performing research or monitoring climate, the IPCC relies on peer-reviewed and published scientific literature to make its assessment. While not a regulatory body, the IPCC assesses information (i.e., scientific literature) regarding human-induced climate change and the impacts of human-induced climate change, and recommends options to policy makers for the adaptation and mitigation of climate change. The IPCC reports its evaluations in special reports called “assessment reports.” The Fifth Assessment Report was published in 2014. The Fifth Assessment Report upgrades the likelihood of climate change being attributable to human activities to “extremely likely.”

4.3.3.2 Federal Laws and Regulations

In *Massachusetts vs. EPA*, the Supreme Court held that United States Environmental Protection Agency (US EPA) has the statutory authority under Section 202 of the Clean Air Act (CAA) to regulate GHGs from new motor vehicles. The court did not hold that the US EPA was required to regulate GHG

emissions; however, it indicated that the agency must decide whether GHGs from motor vehicles cause or contribute to air pollution that is reasonably anticipated to endanger public health or welfare. Upon the final decision, the President signed Executive Order 13432 on May 14, 2007, directing the US EPA, along with the Departments of Transportation, Energy, and Agriculture, to initiate a regulatory process that responds to the Supreme Court's decision.

In December 2007, the President signed the Energy Independence and Security Act of 2007, which sets a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022 and sets a national fuel economy standard of 35 miles per gallon by 2020. The act also contains provisions for energy efficiency in lighting and appliances and for the implementation of green building technologies in federal buildings. On July 11, 2008, the US EPA issued an Advanced Notice of Proposed Rulemaking (ANPRM) on regulating GHGs under the CAA. The ANPRM reviews the various CAA provisions that may be applicable to the regulation of GHGs and presents potential regulatory approaches and technologies for reducing GHG emissions. On April 10, 2009, the US EPA published the Proposed Mandatory Greenhouse Gas Reporting Rule in the *Federal Register* (US EPA 2009). The rule was adopted on September 22, 2009 and covers approximately 10,000 facilities nationwide, accounting for 85 percent of US GHG emissions.

On September 15, 2009, the US EPA and the Department of Transportation's (DOT) National Highway Traffic Safety Administration (NHTSA) issued a joint proposal to establish a national program consisting of new standards for model year 2012 through 2016 light-duty vehicles that will reduce GHG emissions and improve fuel economy. The proposed standards would be phased in and would require passenger cars and light-duty trucks to comply with a declining emissions standard. In 2012, passenger cars and light-duty trucks would have to meet an average standard of 295 grams of CO₂ per mile and 30.1 miles per gallon. By 2016, the vehicles would have to meet an average standard of 250 grams of CO₂ per mile and 35.5 miles per gallon.⁶ These standards were formally adopted by the US EPA and DOT on April 1, 2010.

On December 7, 2009, the US EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the CAA:

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) in the atmosphere threaten the public health and welfare of current and future generations.

⁶ The CO₂ emission standards and fuel economy standards stated are based on US EPA formulas.

- **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

While these findings do not impose additional requirements on industry or other entities, this action was a prerequisite to finalizing the US EPA's proposed GHG emissions standards for light-duty vehicles, which were jointly proposed by the US EPA and DOT. On April 1, 2010, the US EPA and NHTSA issued final rules requiring that by the 2016 model-year, manufacturers must achieve a combined average vehicle emission level of 250 grams of CO₂ per mile, which is equivalent to 35.5 miles per gallon as measured by US EPA standards. These agencies are currently in the process of developing similar regulations for the 2017 through 2025 model years.

4.3.3.3 State Laws and Regulations

Title 24 Building Standards Code

The California Energy Commission first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods. The latest revisions were adopted in 2013 and became effective on July 1, 2014.

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards Code (CALGreen Code). The purpose of the CALGreen Code is to “improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality (California Building Standards Commission 2009). The CALGreen Code is not intended to substitute or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission (CBSC). The CBSC has released a *2013 California Green Building Standards Code* on its website (California Building Standards Commission 2013). The update to Part 11 of the Title 24 Building Standards Code became effective on January 1, 2014. Unless otherwise noted in the regulation, all newly constructed buildings in California are subject of the requirements of the CALGreen Code.

Assembly Bill 1493

In response to the transportation sector's contribution of more than half of California's CO₂ emissions, Assembly Bill 1493 (AB 1493, Pavley) was enacted on July 22, 2002. AB 1493 requires CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles whose primary use is noncommercial personal transportation. CARB adopted the standards in September 2004. The new standards will be phased in during the 2009 through 2016 model years. When fully phased in, the near term (2009–2012) standards will result in a reduction of about 22 percent in GHG emissions compared to the emissions from the 2002 fleet, while the midterm (2013–2016) standards will result in a reduction of about 30 percent.

Before these regulations may go into effect, the US EPA must grant California a waiver under the federal CAA, which ordinarily preempts state regulation of motor vehicle emission standards. On June 30, 2009, the US EPA formally approved California's waiver request. However, in light of the September 15, 2009, announcement by the US EPA and NHTSA regarding the national program to reduce vehicle GHG emissions, California—and states adopting California emissions standards—have agreed to defer to the proposed national standard through model year 2016 if granted a waiver by the US EPA. The 2016 endpoint of the two standards is similar, although the national standard ramps up slightly more slowly than required under the California standard. The Pavley standards require additional reductions in CO₂ emissions beyond 2016 (referred to as Phase II standards). While the Phase II standards have yet to be fully developed, CARB has made it clear that the state intends to pursue additional reductions from motor vehicles in the 2017 through 2020 timeframe under the California Global Warming Solutions Act of 2006.

Executive Order S-3-05 and the Climate Action Team

In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The Secretary of Cal EPA is required to coordinate efforts of various agencies in order to collectively and efficiently reduce GHGs. Some of the agency representatives involved in the GHG reduction plan include the Secretary of the Business, Transportation and Housing Agency, the Secretary of the Department of Food and Agriculture, the Secretary of the Resources Agency, the Chairperson of CARB, the Chairperson of the CEC, and the President of the Public Utilities Commission.

Representatives from each of the aforementioned agencies comprise the Climate Action Team. The Cal EPA secretary is required to submit a biannual progress report from the Climate Action Team to the

governor and state legislature disclosing the progress made toward GHG emission reduction targets. In addition, another biannual report must be submitted illustrating the impacts of global warming on California's water supply, public health, agriculture, coastline, and forests, and reporting possible mitigation and adaptation plans to combat these impacts. Some strategies currently being implemented by state agencies include CARB introducing vehicle climate change standards and diesel anti-idling measures, the Energy Commission implementing building and appliance efficiency standards, and the Cal EPA implementing their green building initiative. The Climate Action Team also recommends future emission reduction strategies, such as using only low-GWP refrigerants in new vehicles, developing ethanol as an alternative fuel, reforestation, solar power initiatives for homes and businesses, and investor-owned utility energy efficiency programs. According to the report, implementation of current and future emission reduction strategies have the potential to achieve the goals set forth in Executive Order S-3-05.

Assembly Bill 32

In furtherance of the goals established in Executive Order S-3-05, the legislature enacted Assembly Bill 32 (AB 32, Nuñez and Pavley), the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006. AB 32 represents the first enforceable statewide program to limit GHG emissions from all major industries with penalties for noncompliance. AB 32 requires the state to undertake several actions. The major requirements are discussed below.

CARB Early Action Measures

CARB is responsible for carrying out and developing the programs and requirements necessary to achieve the goal of AB 32—the reduction of California's GHG emissions to 1990 levels by 2020. The first action under AB 32 resulted in CARB's adoption of a report listing three specific early-action greenhouse gas emission reduction measures on June 21, 2007. On October 25, 2007, CARB approved six additional early-action GHG reduction measures under AB 32. CARB has adopted regulations for all early action measures. The early-action measures are divided into three categories:

- Group 1 – GHG rules for immediate adoption and implementation
- Group 2 – Several additional GHG measures under development
- Group 3 – Air pollution controls with potential climate co-benefits

The original three adopted early-action regulations meeting the narrow legal definition of “discrete early-action GHG reduction measures” include:

- a low-carbon fuel standard to reduce the “carbon intensity” of California fuels;

- reduction of refrigerant losses from motor vehicle air conditioning system maintenance to restrict the sale of “do-it-yourself” automotive refrigerants; and
- increased methane capture from landfills to require broader use of state-of-the-art methane capture technologies.

The six additional early-action regulations adopted on October 25, 2007, also meeting the narrow legal definition of “discrete early-action GHG reduction measures,” include:

- reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology;
- reduction of auxiliary engine emissions of docked ships by requiring port electrification;
- reduction of perfluorocarbons from the semiconductor industry;
- reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products);
- the requirement that all tune-up, smog check and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency; and
- restriction on the use of sulfur hexafluoride (SF₆) from non-electricity sectors if viable alternatives are available.

State of California Greenhouse Gas Inventory and 2020 Limit

As required under AB 32, on December 6, 2007, CARB approved the 1990 GHG inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 MMTCO_{2e}. CARB also projected the state’s 2020 GHG emissions under “business as usual” (BAU) conditions—that is, emissions that would occur without any plans, policies, or regulations to reduce GHG emissions. CARB used an average of the state’s GHG emissions from 2002 through 2004 and projected the 2020 levels based on population and economic forecasts. The projected net emissions totaled approximately 596 MMTCO_{2e}, though this was updated in 2010 to 507 MMTCO_{2e}. Therefore, the state must reduce its 2020 BAU emissions by approximately 16 percent in order to meet the 1990 target.

The inventory revealed that in 1990, transportation, with 35 percent of the state’s total emissions, was the largest single sector, followed by industrial emissions, 24 percent; imported electricity, 14 percent; in-state electricity generation, 11 percent; residential use, 7 percent; agriculture, 5 percent; and commercial uses, 3 percent. AB 32 does not require individual sectors to meet their individual 1990 GHG emissions inventory; the total statewide emissions are required to meet the 1990 threshold by 2020.

CARB Mandatory Reporting Requirements

In addition to the 1990 emissions inventory, CARB also adopted regulations requiring the mandatory reporting of GHG emissions for large facilities on December 6, 2007. The mandatory reporting regulations require annual reporting from the largest facilities in the state, which account for approximately 94 percent of point source greenhouse gas emissions from industrial and commercial stationary sources in California. About 800 separate sources fall under the new reporting rules and include electricity-generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and industrial sources that emit over 25,000 tons of carbon dioxide each year from on-site stationary combustion sources. Transportation sources, which account for 38 percent of California's total GHG emissions, are not covered by these regulations but will continue to be tracked through existing means.

AB 32 Climate Change Scoping Plan

As indicated above, AB 32 requires CARB to adopt a scoping plan indicating how reductions in significant GHG sources will be achieved through regulations, market mechanisms, and other actions. After receiving public input on their discussion draft of the scoping plan, the CARB Governing Board approved the *Climate Change Scoping Plan* on December 11, 2008. Key elements of the Scoping Plan include the following recommendations:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewable energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

Under the Scoping Plan, approximately 85 percent of the state's emissions are subject to a cap-and-trade program where covered sectors are placed under a declining emissions cap. The emissions cap incorporates a margin of safety whereas the 2020 emissions limit will still be achieved even in the event

that uncapped sectors do not fully meet their anticipated emission reductions. Emissions reductions will be achieved through regulatory requirements and the option to reduce emissions further or purchase allowances to cover compliance obligations. It is expected that emission reduction from this cap-and-trade program will account for a large portion of the reductions required by AB 32.

Table 4.3-2, AB 32 Scoping Plan Measures (SPMs), lists CARB’s preliminary recommendations for achieving GHG emissions reductions under AB 32 along with a brief description of the requirements and applicability.

**Table 4.3-2
AB 32 Scoping Plan Measures (SPMs)**

Scoping Plan Measure	Description
SPM-1: California Cap-and-Trade Program linked to Western Climate Initiative	Implement a broad-based cap-and-trade program that links with other Western Climate Initiative Partner programs to create a regional market system. Ensure California’s program meets all applicable AB 32 requirements for market-based mechanisms. Capped sectors include transportation, electricity, natural gas, and industry. Projected 2020 business-as-usual emissions are estimated at 512 metric tons of CO ₂ equivalents (MTCO ₂ e); preliminary 2020 emissions limit under cap-and-trade program are estimated at 365 MTCO ₂ e (29 percent reduction).
SPM-2: California Light-Duty Vehicle GHG Standards	Implement adopted Pavley standards and planned second phase of the program. AB 32 states that if the Pavley standards (AB 1493) do not remain in effect, CARB shall implement equivalent or greater alternative regulations to control mobile sources.
SPM-3: Energy Efficiency	Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts. The Scoping Plan considers green building standards as a framework to achieve reductions in other sectors, such as electricity.
SPM-4: Renewables Portfolio Standard	Achieve 33 percent Renewables Portfolio Standard by both investor-owned and publicly owned utilities.
SPM-5: Low Carbon Fuel Standard	CARB identified the Low Carbon Fuel Standard as a Discrete Early Action item and the final regulation was adopted on April 23, 2009. In January 2007, Governor Schwarzenegger issued Executive Order S-1-07, which called for the reduction of the carbon intensity of California’s transportation fuels by at least 10 percent by 2020.
SPM-6: Regional Transportation-Related Greenhouse Gas Targets	Develop regional greenhouse gas emissions reduction targets for passenger vehicles. SB 375 requires CARB to develop, in consultation with metropolitan planning organizations (MPOs), passenger vehicle greenhouse gas emissions reduction targets for 2020 and 2035 by September 30, 2010. SB 375 requires MPOs to prepare a sustainable communities strategy to reach the regional target provided by CARB.
SPM-7: Vehicle Efficiency Measures	Implement light-duty vehicle efficiency measures. CARB is pursuing fuel-efficient tire standards and measures to ensure properly inflated tires during vehicle servicing.
SPM-8: Goods Movement	Implement adopted regulations for port drayage trucks and the use of shore power for ships at berth. Improve efficiency in goods movement operations.
SPM-9: Million Solar Roofs Program	Install 3,000 MW of solar-electric capacity under California’s existing solar programs.
SPM-10: Heavy/Medium-Duty Vehicles	Adopt heavy- and medium-duty vehicle and engine measures targeting aerodynamic efficiency, vehicle hybridization, and engine efficiency.

Scoping Plan Measure	Description
SPM-11: Industrial Emissions	Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.
SPM-12: High Speed Rail	Support implementation of a high-speed rail (HSR) system. This measure supports implementation of plans to construct and operate a HSR system between Northern and Southern California serving major metropolitan centers.
SPM-13: Green Building Strategy	Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.
SPM-14: High GWP Gases	Adopt measures to reduce high global warming potential gases. The Scoping Plan contains 6 measures to reduce high-GWP gases from mobile sources, consumer products, stationary sources, and semiconductor manufacturing.
SPM-15: Recycling and Waste	Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.
SPM-16: Sustainable Forests	Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation. The federal government and California's Board of Forestry and Fire Protection have the regulatory authority to implement the Forest Practice Act to provide for sustainable management practices. This measure is expected to play a greater role in the 2050 goals.
SPM-17: Water	Continue efficiency programs and use cleaner energy sources to move water. California will also establish a public goods charge for funding investments in water efficiency that will lead to as yet undetermined reductions in greenhouse gases.
SPM-18: Agriculture	In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020. Increase efficiency and encourage use of agricultural biomass for sustainable energy production. CARB has begun research on nitrogen fertilizers and will explore opportunities for emission reductions.

Source: California Air Resources Board, Climate Change Scoping Plan, (2008).

The Scoping Plan must be updated every five years, and accordingly CARB approved the First Update to the Scoping Plan in May 2014. The First Update includes new strategies and recommendations, describes progress towards climate change goals in California, identifies CARB's climate change priorities for the next five years, and sets the groundwork for longer term goals such as those included in Executive Order S-3-05. The First Update also states that California is expected to obtain its GHG emissions targets in 2020, primarily due to the ability to impose a 'hard cap' on emissions through the Cap and Trade program.

Senate Bill 97 (CEQA Guidelines)

In August 2007, the legislature enacted SB 97 (Dutton), which directed the Governor's Office of Planning and Research (OPR) to develop guidelines under the California Environmental Quality Act (CEQA) for the mitigation of GHG emissions. A number of actions have taken place under SB 97, which are discussed below.

OPR Climate Change Technical Advisory

On June 19, 2008, OPR issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents (OPR 2008). The advisory indicated that a project's GHG emissions, including those associated with vehicular traffic and construction activities should be identified and estimated. The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures that are necessary to reduce GHG emissions to a less than significant level. The advisory did not recommend a specific threshold of significance. Instead, OPR requested that CARB recommend a method for setting thresholds that lead agencies may adopt (OPR 2009).

CEQA Guideline Amendments

In its work to formulate CEQA Guideline Amendments for GHG emissions, OPR submitted the *Proposed Draft CEQA Guideline Amendments for Greenhouse Gas Emissions* to the Secretary for Natural Resources on April 13, 2009. The Natural Resources Agency conducted formal rulemaking procedures in 2009 and adopted the CEQA Guideline Amendments on December 30, 2009. They became effective in March 2010.

Senate Bill 375

The California legislature passed SB 375 (Steinberg) on September 1, 2008. SB 375 requires CARB to set regional GHG reduction targets after consultation with local governments. The target must then be incorporated within that region's regional transportation plan (RTP), which is used for long-term transportation planning, in a Sustainable Communities Strategy. SB 375 also requires each region's regional housing needs assessment (RHNA) to be adjusted based on the Sustainable Communities Strategy in its RTP. Additionally, SB 375 reforms the environmental review process to create incentives to implement the strategy, especially transit priority projects. The governor signed SB 375 into law on September 30, 2008.

On January 23, 2009, CARB appointed a Regional Targets Advisory Committee (RTAC) to provide recommendations and methodologies to be used in the target setting process. The RTAC provided its recommendations in a report to CARB on September 29, 2009. On August 9, 2010, CARB staff issued the *Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375*. CARB staff proposed draft reduction targets for the four largest MPOs (Bay Area, Sacramento, Southern California, and San Diego) of 7 to 8 percent for 2020 and reduction targets between 13 to 16 percent for 2035. For the Bay Area, CARB established a draft target of 7 percent for 2020 and 15 percent for 2035. These targets were recommended to CARB by the Metropolitan Transportation Commission, which adopted the thresholds for its planning purposes on July 28, 2010. Of note, the

proposed reduction targets explicitly exclude emission reductions expected from the AB 1493 and low carbon fuel standard regulations. CARB adopted the final targets on September 23, 2010.

4.3.3.3 Regional Programs

In December 2009, the Sacramento Metropolitan Air Quality Management District (SMAQMD) adopted the *Guide to Air Quality Assessment in Sacramento County* (CEQA Guide) and has continued to update the guide with the latest update occurring in June 2015. The CEQA Guide contains recommendations for assessing and reducing the impacts of project-specific GHG emissions on global climate change. According to the CEQA Guide, projects should describe the existing environment and regulatory setting, identify the significance thresholds, quantify the project's GHG emissions from both construction and operational activities, determine the significance of the emissions, and consider feasible mitigation measures to reduce significant impacts. The CEQA Guide identifies the SMAQMD significance threshold for lead agencies to use. The SMAQMD's CEQA Guide also provides recommended measures for reducing GHG emissions from land use development projects and stationary sources.

4.3.3.4 Applicable Local Plans and Policies

University of California Sustainable Practices Policy

The University of California Sustainable Practices Policy was adopted by The Regents in 2006 and revised periodically through June 2015. The policy was developed to standardize campus practices and is a system-wide commitment to minimize the University of California's impact on the environment and reduce the University's dependence on non-renewable energy sources. The University of California Sustainable Practices Policy promotes the principles of energy efficiency and sustainability in the following areas:

- Green Building Design
- Clean Energy Standard
- Climate Protection Practices
- Sustainable Transportation Practices
- Sustainable Operations
- Recycling and Waste Management
- Environmentally Preferable Purchasing Practices
- Food

The policy guidelines that address these topics recommend that University operations:

- Incorporate the principles of energy efficiency and sustainability in all capital projects, operations and maintenance within budgetary constraints and programmatic requirements.
- Minimize the use of non-renewable energy sources on behalf of UC's built environment by creating a portfolio approach to energy use, including use of local renewable energy and purchase of green power from the grid as well as conservation measures that reduce energy consumption.
- Incorporate alternative means of transportation to/from and within the campus to improve the quality of life on campus and in the surrounding community. The campuses will continue their strong commitment to provide affordable on-campus housing, in order to reduce the volume of commutes to and from campus. These housing goals are detailed in the campuses' LRDPs.
 - Track, report and minimize GHG emissions on behalf of UC operations.
 - Minimize the amount of University-generated waste sent to landfill.
 - Utilize the University's purchasing power to meet its sustainability objectives.

The University of California has signed the American College and University Presidents Climate Commitment. Each signatory commits to completing an inventory of GHG emissions within one year, and to developing, within two years, an institutional plan to achieve climate neutrality as soon as possible. The commitment also includes specific interim actions, including requiring that new campus construction will be built to at least the US Green Building Council's LEED Silver standard or equivalent; purchasing Energy Star appliances; offsetting greenhouse gas emissions generated by institutional air travel; encouraging and providing access to public transportation; purchasing or producing at least 15 percent of the institution's electricity consumption from renewable sources; supporting climate and sustainability shareholder proposals at companies where the institution's endowment is invested; and adopting measures to reduce waste.

UC Davis Sacramento Campus 2010 Long Range Development Plan

The 2010 LRDP is the plan for the development of the campus. Although the 2010 LRDP does not contain policies that specifically address GHG emissions, it does contain a number of elements with respect to fuel- and energy-efficiency provisions and elements that would encourage walking and bicycling on campus and in surrounding neighborhoods, all of which would reduce GHG emissions. The 2010 LRDP incorporates the University of California Policy on Sustainable Practices by establishing principles of energy efficiency, sustainability, and alternative modes of transportation. The following principles are contained in the 2010 LRDP.

Principle #1 **Ensure Appropriate Facilities Adjacencies.** Facility adjacencies help create efficiencies in operations and in the movement of patients, visitors, students, faculty, and staff. Recognizing existing major building investments, new facilities will be located in proximity to the current primary UCDHS mission-related uses.

Principle #2 **Improve Campus Open Space and Landscape Character.** While the Sacramento campus has a number of attractive open spaces and landscaped areas, the campus falls short of being the welcoming environment that it might be. For instance, the campus lacks a large green quad or other major open space typically associated with an academic institution. Also, the site does not yet capture the special nature of “the City of Trees” that characterizes the City of Sacramento, especially the downtown, State Capitol area, and downtown neighborhoods. The planned program growth at the campus provides an excellent opportunity to improve the open space character of the campus. Components will include:

- Improve the open space environment to create a comfortable, more campus-like character in the Education and Research District.
- Create a large, multi-purpose open space in the Education and Research District, suitable for a variety of uses such as graduation ceremonies and informal recreation.
- Create two new pedestrian malls connecting primary destinations of students, faculty and staff: the hospital, the education and research area, and the ambulatory care facilities.
- Continue strong landscape treatment of major roads to provide shaded sidewalks for pedestrians and an image similar to the great Sacramento downtown streets.
- Create a network of secondary, building-related courtyards with amenities such as benches and shade, to provide an outdoor destination for patients, visitors, faculty and staff.

Principle #3 **Provide Convenient Access to and within the Campus.** Providing convenient access to and connections within the campus is crucially important to the successful operations of UCDHS. Within the areas of education and research, parking will move to the periphery in order to support a more pedestrian-friendly, auto-free environment similar to a traditional higher education campus. The campus will continue to incorporate alternate means of transportation to and

from the campus with a particular focus on the commute habits of faculty, staff and students. The campus will support improved transportation options such as working with RT to improve bus and light rail service to and near the campus, and identify potential improvements to campus-operated shuttle systems. The campus will implement appropriate alternate mode use incentives such as discounted transit passes; carpool matching services; preferential parking for carpools, vanpools and low emissions vehicles; and flexible car share programs for the campus. The campus will also implement parking management policies, such as pricing, to encourage use of alternate modes. Finally the campus will encourage students in particular to live in close proximity of the campus to facilitate daily commuting.

Principle #4

Improve Pedestrian Connections throughout the Campus. All areas of the campus will be improved for better pedestrian access. The open space system of the connecting malls will provide the backbone of the connection system. Pedestrian walkways and tree-lined sidewalks will provide additional connections and will ensure easy and efficient ways to move throughout the campus without needing to drive.

Principle #5

Provide Attractive Campus Entries and Edges. Patient access will be focused at two street entry points: Stockton Boulevard and X Street, and Broadway and 50th Street. These entries will provide access to the Patient Care Boulevard, and will simplify access for patients all clinical destinations. In order to minimize impacts on surrounding neighborhoods, access to the campus for general traffic from V Street will be limited to only one location at 49th Street. Other existing entry points at 45th and 48th Streets will be closed to general traffic with only service or emergency vehicles allowed.

Principle #6

Continue to Plan and Operate a Sustainable Campus. The University of California has been a leader in its sustainability practices. The Board of Regents directed the UC President to create a Policy on Sustainable Practices in 2003 which set ambitious goals to advance environmental practices. This policy continues to be updated. Recent reporting indicates that UC has achieved great advances in important areas of energy and waste. In addition UC has received recognition as a national leader in the full spectrum of sustainability areas and is considered among the top tier of “green universities.” The University is committed to developing a long term strategy for meeting the State’s goal of a

reduction of greenhouse gas (GHG) emissions to 2000 levels by 2014, is further pursuing the goal of reducing GHG emissions to 1990 levels by 2020, and is developing an action plan for becoming carbon neutral.

UC Davis Climate Action Plan

As discussed earlier in this section, the UC Policy on Sustainable Practices – Climate Protection section targets three goals: reduction of GHG emissions back to 2000 levels by 2014, to 1990 levels by 2020, and ultimately climate neutrality. Climate neutrality is defined in the UC Policy as the University having a net zero impact on the Earth’s climate, which is to be achieved by minimizing GHG emissions as much as possible and using carbon offsets or other measures to mitigate the remaining GHG emissions.

UC Davis has prepared the 2009-2010 Climate Action Plan (CAP), which includes both the Davis and Sacramento campuses, as well as outlying facilities. The CAP describes and addresses policy and regulatory requirements of (1) the UC Sustainable Practices Policy, (2) AB 32, (3) the American College and University Presidents Climate Commitment, (4) CEQA, and (4) US EPA reporting requirements. The CAP provides documentation of how campus GHG emissions are calculated, a report of 2008 emissions, estimates of past (to 1990) and future emissions (to 2020), a statement of GHG emission reduction goals, a characterization of options and methods to reduce emissions, and a blueprint for future action.

The CAP focuses on the 2014 and 2020 targets, with the understanding that climate neutrality will require fundamental shifts in global and national energy policy, energy production, and technologies currently using fossil fuels. Further, the CAP focuses on emissions related to campus operations, instead of commuting and air travel, because emissions related to commuting and air travel are less than one-quarter those of campus operations. The CAP does provide analysis of commuting and air travel reduction options, but does not quantify emissions reductions for those options.

In the CAP, GHG emissions were calculated back to 1990, using hard data whenever possible (and projected data when not), and including nearly every source of emissions. Calculated emissions for all of UC Davis, excluding commuting and air travel, for 2000 are 246,000 MTCO_{2e} and for 1990 are 142,000 MTCO_{2e}. In 2008, inventoried emissions (in CCAR), excluding commuting and air travel, totaled 238,000, indicating that UC Davis had already met the 2014 target. Thus, the CAP defined a new emissions target of 210,000 MTCO_{2e}, almost 15 percent below the 2000 emissions, as the new 2014 target. The 2020 target, to reach 1990 emissions, is about 40 percent below the 1990 emissions.

Four years of verified inventories of emissions have shown consistently that the Davis campus contributes about 70 percent of the emissions total, the Sacramento campus contributes about 29 percent of the total, and the outlying facilities contribute about 1 percent of the total.

4.3.4 IMPACTS AND MITIGATION MEASURES

4.3.4.1 Significance Criteria

The impacts related to GHG emissions resulting from the implementation of the proposed project would be considered significant if they would exceed either of the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines*:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment;

In compliance with the SMAQMD CEQA Guide, the quantitative thresholds for direct or indirect GHG emissions are the following:

- Construction: *On an annualized basis, the project would have a significant impact if the construction GHG emissions equaled or exceeded 1,100 metric tons/year (expressed as CO_{2e}).*
- Operation: *On an annualized basis, the project would have a significant impact if the operational phase GHG emissions equaled or exceeded 1,100 metric tons/year (expressed as CO_{2e}).*
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

4.3.4.2 Methodology

This section was prepared in conformance with the SMAQMD CEQA guide using the CalEEMod emissions estimating model to estimate project-related GHG emissions. Site-specific or project-specific data were used in the CalEEMod model where available. Where information was not available for the proposed project, model default values were used. Emission calculations conducted for the proposed project are contained in **Appendix 4.2**.

4.3.4.3 2010 LRDP EIR Mitigation Measures Included in the Proposed Project

With adoption of the 2010 UC Davis Sacramento Campus LRDP, UC Davis began implementing a series of mitigation measures to reduce GHG emissions. The adopted LRDP mitigation measures are listed below in **Table 4.3-3, LRDP EIR Mitigation Measures**. These measures continue to be implemented as part of on-going operations and planning for new facilities, and relevant measures have been incorporated into and made part of the proposed project.

**Table 4.3-3
2010 LRDP EIR Mitigation Measures**

Mitigation Measure	Description
LRDP MM GHG-1a	<p>UC Davis shall implement green building design standards for all new construction developed under the 2010 LRDP in accordance with the UC Policy on Sustainable Practices.</p> <ul style="list-style-type: none"> • New building projects, other than acute-care facilities, shall outperform the required provisions of the California Energy Code (Title 24) energy-efficiency standards by at least 20 percent. • New building projects, other than acute-care facilities, shall outperform the required provisions of the California Energy Code (Title 24) energy-efficiency standards by 30 percent or more, whenever possible within the constraints of program needs and standard budget parameters. • UC Davis shall develop and implement, in consultation with other campuses and medical centers, standards for energy efficiency for new acute-care facilities. • New building projects, except laboratory and acute care facilities, shall be certified to a minimum standard equivalent to a LEED™-NC “Silver” rating according to the version of LEED™-NC that is current at the time of design approval. • New building projects, except laboratory and acute care facilities, shall be certified to a minimum standard equivalent to a Leadership in Energy and Environmental Design (LEED™) “Gold” rating for new construction (NC), whenever possible within the constraints of program needs and standard budget parameters, according to the version of LEED™-NC that is current at the time of design approval. • New laboratory building projects shall be certified to a minimum standard equivalent to a LEED™-NC “Silver” rating and the Laboratories for the 21st Century (Labs21) Environmental Performance Criteria (EPC), as appropriate. The design process will include attention to energy efficiency for systems not addressed by the California Energy Code (Title 24). • New building projects shall achieve at least two of the available credits in the LEED™-NC Water Efficiency category and shall cooperate with local water district in efforts to conserve water and to meet reduced water use goals of the local district. • New privatized development projects on The Regents’ land where the project is to be used for a programmatic or auxiliary purpose (i.e., a University-related purpose) shall comply with the provisions of UC Policy on Sustainable Practices listed herein. • New building projects built on The Regents’ land pursuant to a ground lease by a private, institutional or government entity (“Lessee”) for the Lessee’s own use (whether in support the University’s mission or to generate income for the University) shall abide by the UC Policy provisions listed herein.
LRDP MM GHG-1b	<p>The University of California is developing and UC Davis shall participate in a system-wide portfolio approach to reduce consumption of nonrenewable energy. The portfolio will include a combination of energy efficiency projects, the incorporation of local renewable power measures for existing and new facilities, green power purchases from the electrical grid, and other energy measures with equivalent demonstrable effect on the environment and reduction in fossil fuel usage. UC Davis shall achieve a level of grid-provided electricity from renewable sources that is similar to or greater than the State’s Renewable Portfolio Standard (RPS).</p>

Mitigation Measure	Description
LRDP MM GHG-1c	<p>UC Davis shall implement environmentally preferable purchasing practices for all new construction developed under the 2010 LRDP in accordance with the UC Policy on Sustainable Practices and the UC Davis CAP.</p> <ul style="list-style-type: none"> • New building projects shall procure only products with an ENERGY STAR® rating for product categories that have ENERGY STAR® rated products available, consistent with the needs of UC Davis researchers. • New building projects shall require that suppliers ensure that all electronic equipment and items delivered to the project site enable all energy efficiency and conservation features, if the option exists and is consistent with the needs of the project. • New building projects shall give preference to technologies that ensure the efficient use of water resources for all products and services that require the use of water (e.g., low-flow water fixtures, water efficient irrigation, etc.).
LRDP MM GHG-1d	<p>UC Davis shall implement transportation reduction measures in accordance with the UC Policy on Sustainable Practices and the UC Davis CAP.</p> <ul style="list-style-type: none"> • For all campus-owned fleet vehicles, old equipment scheduled for retirement shall be preferentially replaced with fuel efficient, low emission vehicles (LEV), zero-emission vehicles (ZEV), and/or alternative-fueled vehicles consistent with the needs of the campus. • UC Davis shall investigate ways to expand or further improve upon the Green Light Commuter Club by providing additional alternative transportation options and incentives, and shall educate students, staff, faculty, and visitors about the program. • UC Davis shall implement campus-wide policies and programs for reducing vehicle and flight miles traveled through teleconferencing, telecommuting, and telemedicine and shall educate students, staff, faculty, and visitors about these policies and programs. • UC Davis shall pursue the expansion of Transportation Demand Management (TDM) programs and projects to reduce the environmental impacts from commuting. TDM programs may include: carshare, carpools (rideshare), vanpools, buspools, campus shuttles, transit, bicycle circulation system, pedestrian circulation system, emergency rides home, telecommuting, flexible schedules, parking management (amount, access, fees), etc. In conjunction with this effort, campuses will engage in advocacy efforts with local transit districts to improve routes in order to better serve student and staff ridership. UC Davis shall educate students, staff, faculty, and visitors about TDM programs.
LRDP MM GHG-1e	<p>UC Davis shall implement further waste reduction and recycling actions to reduce overall contributions to the campus landfill. Waste reduction and recycling actions shall include new purchasing requirements to increase recycled content in consumable materials and improved requirements for purchasing recyclable materials where possible.</p>
LRDP MM GHG-1f	<p>UC Davis shall monitor and report the total annual GHG emissions on a biannual basis. If the total annual increase in emissions from the project exceeds 25,000 MTCO_{2e} in 2014 and/or 2020, UC Davis shall buy renewable energy credits, offsets, and/or allowances in accordance with the UC Policy on Sustainable Practices and/or a future cap-and-trade program to reduce the new emissions to below 25,000 MTCO_{2e}.</p>

Source: UC Davis Sacramento Campus, 2010 LRDP EIR, Section 4.6, Greenhouse Gas Emissions.

4.3.4.4 Project Impacts and Mitigation Measures

Impact GHG-1: **The proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. (Less than significant)**

The project GHG emissions were calculated using the CalEEMod emissions model. CalEEMod provides output for construction related emissions and for operational emissions. The following impact analysis first addresses construction GHG emissions and then operational GHG emissions.

Construction Emissions

For construction emissions, project-specific data regarding construction and demolition timing, expected construction and demolition equipment, and detailed demolition debris hauling information were used as inputs for the CalEEMod modelling. Where project-specific information was not available, the CalEEMod default values were utilized.

The proposed project consists of three main construction/demolition elements: Housestaff Building demolition, North Addition Office Building construction, and North/South Wing demolition. In addition, a final element of providing a new façade to the west face of the hospital and completing the landscape plazas were considered part of the North/South Wing demolition for purposes of the CalEEMod modeling.

The model outputs for construction/demolition activities are shown below in **Table 4.3-4 Annual GHG Emissions from Demolition/Construction Activities**. The Housestaff Building demolition and the North Addition Office Building construction would overlap in year 2016, with North Addition construction continuing into 2018. The total emissions from all of the Housestaff Building demolition and the North Addition construction activities were estimated to be 902 MTCO_{2e} and during the three-year period of 2016, 2017, and 2018, these emissions are estimated to be approximately 301 MTCO_{2e} per year. The North/South Wing demolition would take place mostly in 2020 with some activities concluding in 2021. The North/South Wing demolition was estimated to result in total emissions of 494 MTCO_{2e}. In combination, all of the construction demolition activities would result in 1,396 MTCO_{2e} and when averaged over the construction years of 2016, 2017, 2018, and 2020, the resulting annual average emissions would 349 MTCO_{2e}. GHG emissions during none of the construction years would exceed the threshold of 1,100 MTCO_{2e} per year. The potential GHG emission impact from construction activities would be less than significant.

**Table 4.3-4
Annual GHG Emissions for Demolition/Construction Activities**

Scope	Source	GHG Emissions Metric Tons CO ₂ e/year*		
		Overlapping Phases: Housestaff Demolition 2016 and North Addition Construction 2016-19	North/South Wing Demolition 2020 - 21	Total Annual GHG Emissions
Demolition/ Construction	Demolition/ Construction Annual	Total for years 2016-2018 = 902 Annual average =301	494	Total for years 2016 - 2018, 2020 = 1,396 Annual average (4-year period) = 349
SMAQMD Threshold (per year)				1,100
Exceeds SMAQMD Threshold				NO

Source: CalEEMod Model Results. Emission details are provided in **Appendix 4.2**.

Note: Totals in table may not appear to add exactly due to rounding. Estimated emissions account for construction and demolition trips.

Operational Emissions

To evaluate the proposed project's operational impacts, GHG emissions associated with the existing buildings under the present conditions were compared to the GHG emissions that would result in the future upon completion of the proposed project. These emissions were estimated using basic CalEEMod default inputs for the three buildings that are part of the proposed project, Housestaff Building (proposed for demolition), the North Addition Office Building (proposed for construction), and the North/South Wing (proposed for demolition). The Housestaff Building and the North/South Wing were modeled with no "mitigation factors" such as energy efficiency items included in the CalEEMod model. For the North Addition Office Building project, improved energy efficiency items were selected within the CalEEMod mitigation factors to account for the energy efficiency measures that will be required under the UC Policy and the UC-equivalent LEED Gold certification or better that the project will seek. The operational emissions for the Housestaff Building and the North/South Wing are presented below as reduced emissions reflecting that the proposed project would result in these buildings ceasing operations and thus eliminating GHG emissions associated with each building.

Table 4.3-5, Annual GHG Emissions for Operational Activities, summarizes the output of operational GHG emissions that would result from the proposed project. With the large GHG emission reductions that would occur from closure of Housestaff Building and the North/South Wing, the overall operational

effect of the proposed project on GHG emissions would be a net decrease. The Housestaff Building and the North/South Wing are projected to result in a decrease of 284 and 3,361 MTCO₂e per year respectively. The North Addition Office Building is projected to result in new operational GHG emissions of 790 MTCO₂e per year. The net change in operational GHG emissions is projected to be a decrease of 2,855 MTCO₂e per year.

**Table 4.3-5
Annual GHG Emissions for Operational Activities**

Scope	Source	GHG Emissions (Reductions) Metric Tons CO ₂ e/year*			
		Housestaff Building Ceasing Operations - 2016	North Addition Operations - 2019	North/South Wing Ceasing Operations - 2019	Total Annual GHG Emissions
Energy	Electricity and Gas Operational Estimates	-188	759	-2,219	-1,653
Other	Waste	-90	59	-1,072	-1,103
Other	Water	-6	67	-70	-9
Total Annual GHG Emissions (Reductions)		-284	885	-3,361	-2,765
SMAQMD Threshold (per year)				1,100	
Exceeds SMAQMD Threshold				NO	

Source: CalEEMod Model Results. Emission details are provided in *Appendix 4.2*

Note: Totals in table may not appear to add exactly due to rounding. No mobile emissions were estimated because there would be no increase in campus population as a result of the proposed project and therefore no increase in daily vehicle trips to the campus.

It is noteworthy that not only would the annual construction emissions associated with the proposed project be well below the threshold recommended by the Air District, the total demolition and construction GHG emissions (1,396 MTCO₂e) would be more than completely offset by the decrease in the operational emissions (2,885 MTCO₂e per year) Based on this comparison, the project is considered to result in no net increase in GHG emissions. No impact would occur.

Mitigation Measures: No project-level mitigation measures are required.

Impact GHG-2: **The proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. (No Impact)**

As described in **Impact GHG-1** above, the proposed project would reduce the GHG emissions associated with the Sacramento campus by about 2,885 MTCO₂e per year. Furthermore, the proposed project contains no elements that would conflict with UC Davis’s GHG reduction efforts, including the Campus’s Climate Action Plan. There would be no impact.

Mitigation Measures: No project-level mitigation measures are required.

4.3.4.5 Cumulative Impacts and Mitigation Measures

As the impact from a project’s GHG emissions is essentially a cumulative impact, the analysis presented in the section provides an adequate analysis of the proposed project’s cumulative impact related to GHG emissions. No further analysis is required.

4.3.5 REFERENCES

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4.4 HAZARDS AND HAZARDOUS MATERIALS

4.4.1 INTRODUCTION

This section describes the existing conditions with respect to hazards and hazardous materials on the project site and its vicinity, and potential impacts related to hazards and hazardous materials that may occur as a result of the implementation of the proposed Hospital Seismic Demolition and Office Replacement project (proposed project). Regulations and policies affecting hazardous conditions and materials are also described in this section. Information presented in this section was obtained from the Hazardous Materials Survey completed for the North/South Tower (Matec 2014).

Section 4.7 of the 2010 LRDP EIR contains an analysis of hazards and hazardous materials issues for the UC Davis Sacramento campus and anticipated growth of the campus through the year 2025. The following analysis focuses on the potential impacts of the proposed project Hospital Seismic Demolition and Office Replacement project (proposed project) consisting of the three components: North Addition Office Building construction and operation, North/South Wing Demolition, and Housestaff Building Demolition.

No public or agency comments related to hazards and hazardous materials were received in response to the Notice of Preparation (NOP) issued for this EIR. All comment letters received in response to the NOP are provided in **Appendix 1.0** of this Draft EIR.

4.4.2 ENVIRONMENTAL SETTING

4.4.2.1 Hazardous Materials

The term “hazardous material” is defined in Section 25501 of the California Health and Safety Code as any material that, because of quantity, concentration, or physical or chemical characteristics poses a significant present or potential hazard to human health and safety or to the environment. Hazardous materials are grouped into the following four categories, based on their properties: toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), and reactive (causes explosions or generates toxic gases).

Numerous hazardous materials, including non-radioactive hazardous chemicals (organic compounds, reagents) and radioactive materials, are used in patient care and clinical operations and research activities at the Sacramento campus. Hazardous materials are also used in facility operations and building, grounds and vehicle maintenance. Hazardous material use in turn generates hazardous wastes. Ongoing renovation projects also generate asbestos waste, and used batteries from throughout the campus also

require recycling or disposal. In addition to the above, several sources of non-ionizing radiation (e.g., lasers, magnets, and microwave generators) are used to conduct research on university campuses and in research facilities. Lasers and magnets (e.g., MRI) are also used in patient care. Certain scientific materials, including laboratory animals, that are not hazardous materials by definition, are also used in research. University campuses, especially medical schools, perform a wide range of biological and related research involving recombinant technology, recombinant genomic materials, and genetically modified organisms (GMOs). Recombinant research is commonly performed using microbiological agents (e.g., bacteria and viruses), human and animal cells, and other organisms, such as mice.

The Campus has numerous policies and procedures in place that govern how chemicals, pharmaceuticals, biohazardous, and radioactive materials are used, stored, and disposed. This ensures compliance with applicable federal, state, and local laws and regulations pertaining to hazardous materials.

Hazardous Chemical Materials

A variety of chemicals are used in laboratories on the campus, along with many products that contain hazardous chemicals. With few exceptions, specifically the Pathology laboratories, most of the hazardous materials are stored and used in small quantities, generally a few gallons or less. The UC Davis Office of Environmental Health and Safety (UC Davis EH&S) maintains a computerized inventory of hazardous chemical materials stored in School of Medicine buildings on the Sacramento campus and the UC Davis Health System Office of Environmental Health and Safety (Sacramento Campus EH&S) maintains a manual inventory for all other locations. Sacramento Campus EH&S submits applicable portions of this inventory to the County of Sacramento Department of Environmental Management as part of its Hazardous Materials Business Plans (HMBPs). There are four HMBPs for the Sacramento campus—for the Central Plant, Fleet Services, School of Medicine facilities, and the remainder of the campus. The HMBPs, which may be reviewed at the Sacramento Campus EH&S office, list the names and quantities of all hazardous chemical materials stored on the campus in quantities per building greater than 55 gallons (for liquids), 500 pounds (for solids), or 200 cubic feet (for gases).¹

In addition to the chemicals stored in buildings, the Sacramento campus has six underground storage tanks ranging in capacity from 10,000 gallons to 15,000 gallons, and other smaller aboveground storage tanks with capacities ranging from 165 gallons to 1,000 gallons, used to store fuel, waste oil, and aqueous ammonia. All of the tanks meet federal, state, and local regulatory standards.²

¹ Personal communication with John Danby and Impact Sciences, February 1, 2010.

² Personal communication with John Danby and Impact Sciences, February 1, 2010.

Radioactive and Biohazardous Materials

Radioactive and biohazardous materials are used on the Sacramento campus in research or diagnostic applications, as well as patient treatment (radiopharmaceuticals). The proposed project would involve no use of radioactive or biohazardous materials and no detailed background on the use or regulations of these are provided in this analysis. Additional analysis of radioactive and biohazardous materials on the Sacramento campus are available beginning on page 4.7-3 of the 2010 LRDP EIR.

4.4.2.2 Soil and Groundwater Contamination

A government records report was reviewed for the 2010 LRDP EIR for the Sacramento campus and the area within 0.5 mile of the campus (EDR 2009). This report searches federal and state databases, including the California Government Code 65962.5 (Cortese) list, for potential sources of hazardous substances or petroleum that might affect soil and/or groundwater quality at the project site and its vicinity. The report also lists potential sources of hazardous airborne substances that might affect air quality, the impacts of which are evaluated in **Section 4.2, Air Quality**.

There is one site on the campus that is currently listed on the Cortese list. Review of listings for the campus indicate that, historically, there were 10 underground storage tanks (USTs) on the campus ranging in capacity from 500 gallons to 26,000 gallons (EDR 2009) that were associated with the former Fleet Services facility on V Street or the old boiler plant.³ The USTs contained diesel, unleaded gasoline, and waste oil (EDR 2009). The former Fleet Services facility was demolished in the early 1990s prior to construction of the Davis Tower. The tanks, including one leaking tank, were removed and the site was remediated. The old Boiler Plant and Camellia Cottage were demolished in 2003 and replaced with the new Surgery and Emergency Services Pavilion. The boiler plant USTs were removed and no contamination was found. However, an old redwood tank used for bunker fuel was discovered beneath the site of Camellia Cottage, which had previously been the site of an original hospital building used for cleaning laundry. The tank contained petroleum hydrocarbons which appeared to have been heating oil for the laundry building boiler. The contaminated soil was excavated and disposed of in 2003 (RGA 2005). Closure of the site and further compliance needs took place after completion of final site documentation in April 2011. There is no other known soil or groundwater contamination on the Sacramento campus at this time.

Five properties within a 0.5-mile radius of the project site, though outside of the campus boundaries, are listed on the regulatory agency databases. The database listings show that no leaks were detected for

³ Personal communication with John Danby and Impact Sciences, May 18, 2010.

USTs. No known RCRA violations occurred at the sites and the cleanup of the LUST sites has been completed (EDR 2009).

4.4.3 REGULATORY SETTING

Sacramento campus facilities are subject to environmental, health, and safety regulations applicable to the transportation, use, management, and disposal of hazardous materials and wastes. This section provides an overview of the regulatory setting and describes current health and safety policies and procedures.

The primary federal agencies with responsibility for hazardous materials management include the United States Environmental Protection Agency (US EPA), and the US Department of Transportation (DOT). The applicable federal laws, regulations, and responsible agencies are discussed in detail in this section. In many cases, California state law mirrors or is more restrictive than federal law, and enforcement of these laws has been delegated to the state or a local agency. In January 1996, the California Environmental Protection Agency (CalEPA) adopted regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The program has six elements: (1) hazardous waste generators and hazardous waste on-site treatment, (2) underground storage tanks, (3) aboveground storage tanks, (4) hazardous materials release response plans and inventories, (5) risk management and prevention programs, and (6) Unified Fire Code hazardous materials management plans and inventories. The local agency responsible for implementation of the Unified Program is called the Certified Unified Program Agency (CUPA). As the Sacramento campus is located within Sacramento County, the Environmental Compliance Division of the County's Environmental Management Department (EMD) is the designated CUPA for the campus. Similarly, CDPH has designated EMD as the Local Enforcement Agency (LEA) for the administration of many components, including generator compliance, of the California Medical Waste Management Act, although CDPH has retained authority over permitted medical waste treatment facilities such as the one at the Sacramento campus.

4.4.3.1 Hazardous Materials Management

Federal and state laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. These laws require hazardous materials users to prepare written plans, such as Hazardous Materials Business Plans. Sacramento County, through its CUPA program, requires any business that handles hazardous materials above certain thresholds to prepare a Hazardous Materials Business Plan, which must include the following:

- Details of the facility and business conducted at the site

- An inventory of hazardous materials that are handled or stored on site
- An emergency response plan and contact information
- A site map

The Sacramento campus complies with these state requirements as enforced by the CUPA.

4.4.3.2 Hazardous Waste Handling

The federal Resource Conservation and Recovery Act of 1976 (RCRA) created a federal hazardous waste “cradle-to-grave” regulatory program administered by US EPA. Under RCRA, US EPA regulates the management, treatment, and disposal of hazardous waste, and the investigation and remediation of hazardous waste sites. Individual states may apply to US EPA to authorize them to implement their own hazardous waste programs in lieu of RCRA, as long as the state program is at least as stringent as federal RCRA requirements. California has been authorized by US EPA to implement its own hazardous waste program, with certain exceptions. In California, the Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste, and the investigation and remediation of hazardous waste sites. The California DTSC program incorporates provisions of both federal and state hazardous waste laws. As noted above, DTSC has delegated several components of the hazardous waste program to the local CUPA.

4.4.3.3 Hazardous Materials Transportation

The DOT regulates the transportation of hazardous materials between states and foreign countries. DOT regulations govern all means of transportation, except for packages sent by mail, which are governed by US Postal Service regulations. The State of California has adopted DOT regulations for the intrastate movement of hazardous materials. In addition, the State of California regulates the transportation of hazardous waste originating in the state and passing out of the state.

The two state agencies that have primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans). The CHP enforces hazardous material and hazardous waste labeling and packing regulations to prevent leakage and spills of material in transit and to provide detailed information to cleanup crews in the event of an accident. The CHP conducts regular inspections of licensed transporters to assure regulatory compliance.

Every hazardous materials package type used by a hazardous materials shipper must undergo tests that imitate some of the possible rigors of travel. While not every package must be put through every test,

representative packages for any package design must be able to be dropped, fully loaded, onto a concrete floor with no significant leakage; survive a compression test in a stacked configuration with no significant damage or distortion; demonstrate that they are leak proof when subjected to internal air and/or liquid pressure; and not have package closure mechanisms adversely affected by vibration.

4.4.3.4 Occupational Safety

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The State of California Division of Occupational Safety and Health Administration (Cal/OSHA) is responsible for developing and enforcing worker safety in the workplace in California.

Cal/OSHA regulations contain requirements concerning the use of hazardous materials in the workplace and during construction that mandate employee safety training, safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, emergency action and fire prevention plan preparation, and a hazard communication program. The hazard communication program regulations contain training and information requirements, including procedures for identifying and labeling hazardous substances, and communicating hazard information relating to hazardous substances and their handling. The hazard communication program also requires that Material Safety Data Sheets or equivalent safety information be available to employees, and that employee information and training programs be documented. These regulations require preparation of emergency action plans (escape and evacuation procedures, rescue and medical duties, alarm systems, and training in emergency evacuation).

Cal/OSHA regulations include special provisions for hazard communication to employees in research laboratories, including training in chemical work practices. Specific, more detailed training and monitoring is required for the use of carcinogens, ethylene oxide, lead, asbestos, and certain other chemicals. Emergency equipment and supplies, such as fire extinguishers, safety showers, and eye washes, must also be provided and maintained in accessible places as the need dictates. Cal/OSHA regulations include extensive, detailed requirements for worker protection applicable to any activity that could disturb asbestos-containing materials, including maintenance, renovation, and demolition. These regulations are also designed to ensure that people working near the maintenance, renovation, or demolition activity are not exposed to asbestos.

The Sacramento campus complies with these state requirements related to occupational safety.

4.4.3.5 Local Plans and Policies

The following subsections summarize existing plans related to hazards and hazardous materials that are implemented at the Sacramento campus.

California Accidental Release Prevention Risk Management Plan

In accordance with the provisions of the California Accidental Release Prevention (CalARP) program, the Sacramento campus is required to prepare a Risk Management Plan (RMP) for the use of aqueous ammonia above the California threshold quantity of 500 pounds at the Sacramento Campus Central Energy Plant. The County of Sacramento Environmental Management Department, Hazardous Materials Division, is the Administering Agency for the CalARP program in the county.

The Sacramento campus submitted a five-year update of the RMP for the Central Energy Plant in April 2008. The RMP provides an evaluation of the potential for and impacts of accidental releases from the aqueous ammonia utilized at the Central Energy Plant. The Campus also maintains a Hazardous Materials Business Plan for the Central Energy Plant with annual submittals to the County of Sacramento Environmental Management Department.

Spill Prevention, Control, and Countermeasures Plan

The Sacramento campus has prepared a Spill Prevention, Control, and Countermeasures (SPCC) Plan pursuant to the Code of Federal Regulations, Title 40, Part 112 – Oil Pollution Prevention. The objective of the SPCC Plan is to prevent the discharge of oil from non-transportation related onshore and offshore facilities into or upon the navigable waters of the United States or adjoining shorelines. The areas of the campus subject to the SPCC regulation threshold include the Central Plant, Parking Structure 1 (emergency diesel fire pump), Fleet Services, Lot 7 (emergency diesel generator), the Hazardous Waste Consolidation Facility, and the Portable Diesel Generators. There are various transformers and elevator hydraulic systems located throughout the campus that are also subject to the SPCC regulation.

4.4.4 IMPACTS AND MITIGATION MEASURES

4.4.4.1 Significance Criteria

The impacts related to hazards and hazardous materials from the implementation of the 2010 LRDP would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
- be located on a site that is included on a list of hazardous materials sites compiled pursuant to government code section 65962.5 and, as a result, create a significant hazard to the public or the environment;
- for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;
- for a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area;
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

4.4.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project and circulated with the NOP concluded that further analysis of the following issues was not required in the EIR.

- for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;
- for a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area;
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

4.4.4.3 Methodology

Analysis in the section was conducted through a site visit and tour of areas surrounding the project sites, review of project construction and demolition plans, review of the Hazardous Materials Survey Completed for the North/South Wing of the UC Davis Sacramento Campus Hospital (Matec 2014), and review of Section 4.7 Hazards and Hazardous Materials in the 2010 UC Davis Sacramento Campus LRDP EIR.

4.4.4.4 LRDP EIR Mitigation Measures Included in the Proposed Project

The 2010 LRDP EIR included no mitigation measures for Hazards and Hazardous Materials. Accordingly, no mitigation measures have been incorporated into this analysis.

4.4.4.5 Project Impacts and Mitigation Measures

Impact HAZ-1: Implementation of the proposed project would increase the routine transport, use, storage, and disposal of hazardous materials at the UC Davis Sacramento Campus but would not create a significant hazard to the public or the environment under the routine or reasonably foreseeable upset and accident conditions. (*Less than Significant*)

Implementation of the proposed project involves the construction and operations of new facilities which would replace existing facilities with a net reduction of approximately 125,000 square feet of space. The expected net effect is that while the construction period would result in increased hazardous materials use, storage, and disposal, the long-term operational effect would be a reduction in hazardous materials use, storage, and disposal. The proposed North Addition Office Building would replace the space proposed for demolition in the North/South Wing of the Main Hospital. The North Addition Office Building would consist of new construction free from lead, asbestos, or other known contaminants. With the decreased square footage there would be a commensurate decrease in maintenance of the new facilities as compared to the on-going maintenance in the existing North/South Wing of the Main Hospital. With the operational decrease in the transport, use, storage, and disposal of hazardous materials and wastes, the project would result in no impact involving long-term operational aspects of hazards and hazardous materials. The following discussion evaluates the demolition and construction aspects of transport, use, storage, and disposal of hazardous materials and wastes.

Use of products containing hazardous materials during demolition and construction would be limited to such items as solvents, paints, cleaning agents, and petroleum-based fuels used in vehicles and equipment. Products containing hazardous materials used during these activities would be transported

to, used, and stored at work sites in accordance with applicable hazardous materials management laws and regulations. As discussed in **Section 4.8, Hydrology and Water Quality**, as required by federal and state law, Best Management Practices (BMPs) included in construction storm water pollution prevention plans will be implemented to ensure that runoff from work sites does not contain hazardous materials that could affect receiving water quality. The use and storage of such materials represents a short-term increase, limited only to the duration of work at the demolition or construction site. Therefore, hazardous materials impacts during demolition and construction would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Impact HAZ-2: Demolition activities associated with implementation of the proposed project would not expose people to contaminated building materials. (Less than Significant)

Demolition of the Housestaff Building and North/South Wing could expose construction personnel, staff, patients, students, and visitors to asbestos-containing building materials, lead-based paint, and other hazardous building materials containing polychlorinated biphenyls (PCBs). These buildings to be demolished were constructed prior to the 1970s, when asbestos-containing building materials were being manufactured and used. Therefore, there is a potential for encountering asbestos-containing building materials in the roof/ceiling and floor tiles, building insulation, concrete, and other materials throughout the buildings. The University requirements for building management include removal of asbestos in compliance with strict abatement procedures and in compliance with applicable regulations. The SMAQMD has adopted Rule 902 regarding asbestos and the project would comply with all applicable requirements of Rule 902.

The SMAQMD has identified that demolition of existing buildings and structures would be subject to District Rule 902. SMAQMD Rule 902 is intended to limit asbestos emissions from demolition or renovation of structures and the associated disturbance of asbestos containing waste material generated or handled during these activities. The rule addresses the national emissions standards for asbestos along with some additional requirements. The rule requires lead agencies and their contractors to notify the District of any regulated renovation or demolition activity. This notification includes a description of structures and methods utilized to determine whether asbestos-containing materials are potentially present. All asbestos-containing material found on the site must be removed prior to demolition or renovation activity in accordance with District Rule 902, including specific requirements for surveying, notification, removal, and disposal of material containing asbestos. Therefore, projects that comply with Rule 902 would ensure that asbestos containing materials would be disposed of appropriately and safely. By complying with District Rule 902, thereby minimizing the release of airborne asbestos emissions,

demolition activity would not result in a significant impact to air quality. Because District Rule 902 is in place, no further analysis about the demolition of asbestos-containing materials is needed in a CEQA document. However, the District does recommend that CEQA documents acknowledge and discuss District Rule 902 to support the public's understanding of this issue. Rule 902 specifies that concrete containing asbestos can be demolished prior to abatement provided that adequate wetting of the concrete is completed prior to disturbing the material. UC Davis does not expect that the concrete in the Housestaff Building or the North/South Wing contains asbestos and will test the concrete prior to initiating the SMAQMD Rule 902 permitting requirements. If asbestos is contained in the concrete proposed for demolition, the Rule 902 procedures requiring wetting of the concrete whenever exposed during demolition will be followed to avoid releasing airborne asbestos..

Prior to beginning work, the pre-abatement assessment reports will detail potential abatement needed in each building. The proposed project includes substantial time in the project schedule and specific contracting steps to provide an extended abatement period and post-abatement testing period for each building proposed for demolition. State law requires that contractors and workers be notified of the presence of asbestos in buildings constructed before 1979. The CDPH requires the certification of employees and supervisors performing lead-related construction activities in residential and public buildings. Standard specifications included in all campus construction contracts specify that contractors who disturb or potentially disturb asbestos or lead must comply with all federal, state, and local rules and regulations regarding these materials. Contractors are also required to stop work and inform the Sacramento campus if they encounter material believed to be asbestos, PCBs, lead, or other hazardous materials. Compliance with federal, state, and local regulations, as well as existing campus policies and procedures, including enclosures and dust control measures, would minimize possible exposure to hospital staff and patients.

Prior to any demolition in a laboratory, all hazardous materials must be removed and the laboratory must be surveyed for contamination. Sacramento Campus EH&S then performs a confirmation survey for contamination resulting from the use of radioactive or biohazardous materials, chemical carcinogens, fume hoods or biosafety cabinets, and hazardous chemicals. Sacramento Campus EH&S uses a survey meter and collects wipe samples to test for radioactivity before removing a room from a Radiation Use Authorization. If the Sacramento Campus EH&S auditor finds reasons to suspect a major chemical spill or if there are concerns about waste disposal, sampling for chemical constituents may be performed.

Compliance with federal and state regulations, campus policies, and current UC Davis Sacramento Campus EH&S procedures minimizes the potential for exposure of people to contaminated building materials. These standards have been developed to protect the general population and construction workers from hazards associated with exposure to these materials. Young children, the elderly, and

people in poor health (i.e., patients at the Sacramento campus) may be more susceptible to adverse health effects from exposure to asbestos and lead released to the environment.

The Sacramento campus would continue to comply with federal and state regulations for the proposed project. Abatement would be conducted early in the demolition of Housestaff Building and the North/South Wing, with little potential for exposure in adjacent areas. Prior to demolition, asbestos- and lead-containing materials, and other hazardous materials requiring special handling would be managed and/or removed and disposed of by qualified contractors in accordance with applicable regulations. Therefore, because the campus would continue to comply with applicable procedures and regulations, the removal and disposal of these materials is not considered a significant health hazard, and the impact would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Impact HAZ-3: Implementation of the proposed project would not result in handling of hazardous materials within 0.25 mile of an existing school. (No impact)

The Sacramento High Charter School and the Kit Carson Middle School are located approximately 0.5 miles and 0.75 miles from the project site. Therefore, the project would not involve handling of hazardous materials within 0.25 miles of a school. No impact would occur.

Mitigation Measures: No project-level mitigation measures are required.

Impact HAZ-4: The proposed North Addition Office Building would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. (Less than Significant)

There is one hazardous materials site on the Sacramento campus that is currently listed on the Cortese List compiled pursuant to Government Code Section 65962.5. This is the leaking UST site that, as discussed above, that was remediated in 2003. Regulatory action for the site was completed upon completion of final documentation in April 2011. Furthermore, the proposed building would not be located on the former UST site.

Although the Sacramento campus is not aware of any unremediated contamination, there is a potential for past uses at the campus site to have resulted in spills or leaks of fuels or other hazardous substances that have not been identified. There also may be buried items (e.g., underground tanks installed prior to permitting requirements) or debris, which could have resulted in soil contamination. Construction of projects on the campus could expose construction and demolition workers to contamination.

To minimize the risk associated with construction taking place on a site with unknown contamination, the Campus has contract language that requires work stoppage if any hazardous materials are encountered. Construction workers are trained to identify contaminants based on discoloration of soil or sheen in groundwater. If contaminants are found, the Campus evaluates the nature and extent of contamination, reports the findings to the appropriate regulatory agency, remediates, and then resumes construction. Sacramento Campus EH&S retains qualified contractors to prepare health and safety plans and report compliance for work performed on contaminated sites, and to review site remediation plans prior to construction. Implementation of health and safety plans by campus contractors is a condition of campus and contractor management. Therefore, impacts associated with contaminated soil and groundwater would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

4.4.4.6 Cumulative Impacts and Mitigation Measures

Cumulative Impact HAZ-1: **The proposed project, in conjunction with other past, present and reasonably foreseeable future development, would not result in significant cumulative impacts related to hazardous materials. (*Less than Significant*)**

As described in the 2010 LRDP EIR Section 4.7, Cumulative Impact HAZ-1, the study area for potential cumulative impacts related to hazardous materials is limited to the project sites and their immediate vicinity as this would be the area that could be affected in the event of simultaneous accidental releases of hazardous materials and the area that could be affected by air emissions stemming from the routine use of hazardous materials.

As discussed above, the use of hazardous materials and the generation of hazardous wastes in the proposed office building are not expected to result in significant impacts. Varying amounts and types of hazardous materials would be handled in daily activities and operations. Proper management and treatment/disposal of hazardous wastes would be based on regulations established by the US EPA and the DTSC. Compliance with appropriate federal, state, and local laws and regulations would minimize potential impacts of the project. Most of the area surrounding the project site is built out and according to the land uses designated under the City's General Plan, the Stockton Boulevard corridor was designated as an area of opportunity for redevelopment. The remaining surrounding area is mostly designated for residential uses, and is not identified as an area for new or redevelopment. Although redevelopment of some parcels, especially along Stockton Boulevard, could result in the establishment of land uses that involve the use of hazardous materials, because each project would be subject to laws and regulations

related to the use, storage, transport, and disposal of hazardous materials and wastes, the cumulative risks associated with hazardous materials would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

4.4.5 REFERENCES

Environmental Data Resources, Inc. (EDR). 2009. *Preliminary Map Report*. April 22.

Matec 2014. *Hazardous Materials Survey Completed for the North/South Wing of the UC Davis Sacramento Campus Hospital*.

RGA Environmental Inc. 2005. *Soil Management Report, University of California Davis Medical Center*. August 29.

State Water Resource Control Board (SWRCB). 2009. *UCD Medical Center SESP Site Demolition (T06067 16568), Closure Review*. August 18.

4.5 HYDROLOGY AND WATER QUALITY

4.5.1 INTRODUCTION

This section describes the existing environmental conditions pertaining to the hydrology and water quality on the project site and its vicinity. The description of the existing conditions is followed by a discussion of the regulatory setting. The section evaluates and discusses the consequences associated with implementation of the proposed Hospital Seismic Demolition and Office Replacement project (proposed project). Section 4.14, Volume 1 of the 2010 Long Range Development Plan (LDRP) Environmental Impact Report (EIR) from which this EIR is tiered and the City of Sacramento 2035 General Plan EIR were used in the preparation of this section.

The Central Valley Regional Water Quality Control Board provided a comment letter in response to the Notice of Preparation (NOP) issued for this EIR indicating that certain regulations, permits and design standards may be applicable to the proposed project. All comment letters received in response to the NOP are provided in **Appendix 1.0** of this Draft EIR.

4.5.2 ENVIRONMENTAL SETTING

4.5.2.1 Surface Water Resources

The Sacramento campus is located approximately 1.5 miles south of the American River, and three miles east of the Sacramento River, and is within the 27,000-square-mile Sacramento River Basin. This basin is bounded by the Sierra Nevada to the east, the Coast Ranges to the west, the Cascade Range and Trinity Mountains to the north, and the Sacramento–San Joaquin Rivers Delta to the southeast. The Sacramento River Basin is the largest river basin in California and captures on average approximately 22 million acre-feet of annual precipitation. The Sacramento Valley portion of the basin contains the largest population, concentrated in the cities of Sacramento, West Sacramento, Chico, Red Bluff, and Redding. The river is regulated by dams for power generation, flood control, water supply, recreation, fisheries, and wildlife management (City of Sacramento 2014).

The American River watershed encompasses approximately 1,900 square miles and is a tributary to the Sacramento River. The American River watershed is situated on the western slope of the Sierra Nevada mountain range, extending from the spine of the Sierra Nevada westward to the City of Sacramento. The river is regulated by dams, canals, and pipelines for power generation, flood control, water supply, recreation, fisheries, and wildlife management. Folsom Dam, located on the American River, is owned and operated by the US Bureau of Reclamation. Folsom Lake and its afterbay, Lake Natoma, release

water to the lower American River and to the Folsom South Canal at Nimbus Dam. The operation of Folsom Dam and Nimbus Dam directly affects most of the water utilities on the American River system (City of Sacramento 2014).

The City, including the Sacramento campus, uses surface water from the Sacramento and American Rivers, and groundwater pumped from the North American and South American subbasins to meet its water demands. The City has surface water entitlements, consisting of five appropriative water right permits issued by the State Water Resources Control Board (SWRCB), pre-1914 rights, and a water rights settlement contract with the US Bureau of Reclamation (City of Sacramento 2011).

4.5.2.2 Storm Water Drainage

The existing 142-acre Sacramento campus land area consists of approximately 75 percent impervious and 25 percent pervious surfaces. Under existing conditions, the peak flow rate for a 10-year storm is 178 cubic feet per second (cfs), while the 100-year peak flow is 301 cfs (UC Davis 2010).

Storm water flows from the Sacramento campus are collected in the drain inlets, catch basins, and gutters, before being discharged into the City of Sacramento's storm drain system. Storm water from the western half of the Sacramento campus site is held in an underground storm water detention facility that was constructed on the Sacramento campus by the City of Sacramento, before it is discharged into the City's combined sewer system. The combined sewer system accommodates both domestic sewer discharge and storm water runoff and combined flows are treated at the Sacramento Regional Wastewater Treatment Plant (SRWTP). The storm water detention facility is designed to accommodate runoff from 10-year storm events generated by impervious surfaces on the Sacramento campus. The City designed and constructed the detention system to handle flows from the development of more than 6 million gross square feet of building space on the Sacramento campus. Storm water from the eastern half of the Sacramento campus is collected in a separate storm drain system that discharges into the American River. During large storm events which produce runoff that cannot be handled by the separate storm drain system, to avoid localized flooding, excess storm water from the eastern half of the Sacramento campus is held in separate chambers in the storm water detention facility to then be discharged into the storm drain system at a rate that the system can handle. If flows are very high, the excess storm water is pumped from the separate storm water chambers to the City's combined sewer system, and treated at the SRWTP (UC Davis 2010).

4.5.2.3 Surface Water Quality

The Sacramento campus and the land surrounding it generally consists of flatlands intensely developed with urban uses. Runoff from urban areas is characterized by constituents such as fertilizers, herbicides, and pesticides, and often contains bacteria, high nutrient content, and dissolved solids. "First flush"

storm events, during which pollutants that have accumulated throughout the dry season are concentrated with little dilution by the initial storm event of the season, are thought to have the largest impact on receiving waters.

As stated above, storm water flows from the western half of the Sacramento campus and excess flows from the eastern half are detained on site before they are discharged into the City's combined sewer system or to the American River. The combined sewer system is considered at or near capacity and the City requires all additional inflow into the system to be offset. During smaller storms, the City sends up to 60 million gallons per day (mgd) of wastewater to the SRWTP, which treats storm water and sanitary sewage prior to discharge into the Sacramento River. When the flows in the City's combined sewer system exceed 60 mgd, flows are routed to Pioneer Reservoir, a 22-million-gallon storage and primary treatment facility adjacent to the Sacramento River just north of the Pioneer Bridge (US Highway 50). Once the capacity of Pioneer Reservoir is reached, flows are routed to the City's Combined Wastewater Treatment Plant (CWTP) to maximize available storage, before flows are sent to the Pioneer Reservoir treatment facility for treatment and discharge to the Sacramento River. The CWTP provides primary treatment with disinfection of up to 130 mgd of combined wastewater. The system may also store water in the CWTP basins, such that up to 250 mgd of combined wastewater can receive primary treatment with disinfection before it is discharged to the Sacramento River. Under extreme high flow conditions, discharge of untreated combined wastewater from the combined sewer system may occur (City of Sacramento 2009). Please see **Section 4.8, Utilities and Service Systems**, for more information on the combined sewer and storm drainage facilities that serve the Sacramento campus.

4.5.3 REGULATORY CONSIDERATIONS

4.5.3.1 Federal and State Laws

The California SWRCB is the state agency with the primary responsibility for implementation of both state and federally established regulations relating to water resource issues. Typically, all regulatory requirements are implemented by the SWRCB through regional boards established throughout the state.

Clean Water Act

In 1972, the Federal Water Pollution Control Act—also known as and hereafter referred to as the Clean Water Act (CWA)—was amended to require NPDES permits for discharge of pollutants into the “waters of the United States” that include oceans, bays, rivers, streams, lakes, ponds, and wetlands from any point source. In 1987, the CWA was amended to require that the US Environmental Protection Agency (US EPA) establish regulations for permitting under the NPDES permit program of municipal and industrial storm water discharges. The US EPA published final regulations regarding storm water

discharges on November 16, 1990. The regulations require that municipal separate storm sewer system (MS4) discharges to surface waters be regulated by an NPDES permit.

In addition, the CWA requires the states to adopt water quality standards for water bodies and have those standards approved by the US EPA. Water quality standards consist of designated beneficial uses—e.g., wildlife habitat, agricultural supply, fishing, etc.—for a particular water body, along with water quality criteria necessary to support those uses. Water quality criteria are prescribed concentrations or levels of constituents—such as lead, suspended sediment, and fecal coliform bacteria—or narrative statements that represent the quality of water that supports a particular use. Because California has not established a complete list of acceptable water quality criteria, the US EPA established numeric water quality criteria for certain toxic constituents in the form of the California Toxics Rule (40 CFR 131.38).

Water bodies not meeting water quality standards are deemed “impaired” and, under CWA Section 303(d), are placed on a list of impaired waters for which a Total Maximum Daily Load (TMDL) must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, nonpoint, and natural sources that a water body may receive without exceeding applicable water quality standards (with a “factor of safety” included). Once established, the TMDL is allocated among current and future pollutant sources discharging to the water body.

Both the Lower American River and the Sacramento River (from Knights Landing to the Delta) are listed on the 303(d) list as being impaired for mercury and unknown toxicities (SWRCB 2011).

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act), which is the state’s clean water act, provides the statutory authority for SWRCB and the RWQCBs to regulate water quality and was amended in 1972 to extend the federal CWA authority to these agencies (see **Clean Water Act**, above). The Porter-Cologne Act established the SWRCB and divided the state into nine regions, each overseen by a RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state’s surface and groundwater supplies, but much of the daily implementation of water quality regulations is carried out by the nine RWQCBs. The Sacramento campus is within the Central Valley RWQCB (CVRWQCB).

The Porter-Cologne Act provides for the development and periodic review of water quality control plans (also known as basin plans). The basin plan for the Sacramento River Basin designates beneficial uses and water quality objectives for surface water bodies and groundwater in the region.

4.5.3.2 Programs and Permits

CWA Permits for Discharge to Surface Waters

CWA Sections 401 and 402 contain requirements for discharges to surface waters through the NPDES program, administered by the US EPA. In California, SWRCB is authorized by the US EPA to oversee the NPDES program through the RWQCBs (see related discussion under **Porter-Cologne Water Quality Control Act**, below). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits.

General Construction Permit

According to NPDES regulations, discharges of storm water from construction sites in California with a disturbed area of 1-acre or more, are required either to obtain individual NPDES permits for storm water discharges or to be covered by the statewide Construction General Permit. Coverage under the Construction General Permit is accomplished by completing and filing a Notice of Intent with the SWRCB. Each applicant under the Construction General Permit must ensure that a Storm Water Pollution Prevention Plan (SWPPP) is prepared prior to grading and is implemented during construction.

Effective July 1, 2010, all dischargers are required to obtain coverage under the Construction General Permit Order 2009-0009-DWQ adopted on September 2, 2009, and as amended by Order 2010-0014-DWQ and Order 2012-006-DWQ, adopted February 2011 and July 2012, respectively. Section A of the Construction General Permit describes the elements that must be contained in a SWPPP. The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection, and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list the BMPs the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for “non-visible” pollutants to be implemented if there is a failure of BMPs, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

All new projects which are over one acre in size and which are not already covered by the current stormwater permit are required to calculate the proper classification of the project as either a Risk Level 1, 2 or 3 project. Risk Level 1 has the least stringent requirements and is not subject to either the Numeric Action Limits (NALs) or Numeric Effluent Limits (NELs) which have been established for pH and turbidity. In contrast, a NAL of 250 NTU, and a pH of 6.5-8.5 has been established for Risk Levels 2 and 3, while NELs of 500 NTU and a pH of 6.0-9.0 have been established for Risk Level 3 projects. In addition, Risk Level 1 projects do not have to prepare a Rain Event Action Plan (REAP) while both Risk Level 2 and

3 projects are required to prepare a REAP which is applicable to every event where there is a forecast of 50 percent or greater probability of measurable precipitation (0.01 inch or more). The permit also requires the SWPPP to include a description of all post-construction BMPs on a site and a maintenance schedule.

Municipal Separate Storm Sewer System Permit

Municipal Separate Storm Water Systems (MS4s) are any conveyance or system of conveyances that are owned or operated by a state or local government entity and are designed for collecting and conveying storm water that is not part of a Publicly Owned Treatment Works (i.e., not a combined sewer). The 1987 amendments to the CWA directed the US EPA to implement storm water programs into two phases. Phase I addresses large- and medium-sized MS4 communities with populations of 250,000 or more, and 100,000–250,000, respectively. Phase II regulates storm water discharges associated with small construction activities (activities disturbing between 1- and 5-acres), and small municipal storm water systems (serving populations less than 100,000). The RWQCBs issue MS4 permits that regulate storm water discharges. The permits require the permittees to establish controls to the maximum extent practicable and effectively prohibit non-storm water discharges to the MS4. The MS4 permits detail requirements for new development and significant redevelopment projects, and includes specific sizing criteria for treatment BMPs. The Sacramento campus is subject to the Phase II requirements.

4.5.3.3 Local Programs

City of Sacramento Stormwater Quality Improvement Program

The City of Sacramento's municipal storm water NPDES permit regulates the discharge of all wet and dry weather urban runoff within the City of Sacramento and requires the City to implement a storm water management program to reduce pollutants in storm water to the maximum extent practicable. The City of Sacramento established the Stormwater Quality Improvement Program (SQIP) in 1990 to reduce the pollution carried by storm water into local creeks and rivers in compliance with the municipal storm water NPDES permit. The comprehensive plan includes pollution control measures for construction sites, industrial sites, illegal discharges and illicit connections, new development, and municipal operations. The program also includes an extensive public education effort, target pollutant reduction strategy, and monitoring program.

Stormwater Quality Design Manual for Sacramento and South Placer Regions

In addition, the County of Sacramento and the cities of Sacramento, Folsom, Citrus Heights, Elk Grove, Rancho Cordova, Galt, and Roseville collaborated and published the Stormwater Quality Design Manual for Sacramento and South Placer Regions (May 2007) to meet the regulatory requirements of their

respective municipal storm water NPDES permits. The manual provides locally adapted information for design and selection of three categories of storm water quality control measures: source control, runoff reduction, and treatment control.

4.5.4 IMPACTS AND MITIGATION MEASURES

4.5.4.1 Significance Criteria

The impact of the proposed project on hydrology and water quality would be considered significant if it would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of the pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;
- Create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Inundation by seiche, tsunami, or mudflow.

4.5.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project and circulated with the NOP concluded that no further analysis of the following issues was required in the EIR.

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of the pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site;
- Create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Inundation by seiche, tsunami, or mudflow.

As discussed in the Initial Study, the proposed project would not interfere with groundwater recharge and would not exceed capacity of stormwater runoff systems. The proposed project would increase the area of permeable ground coverage on sites that currently have no permeable coverage so that more stormwater could infiltrate through the surface to assist with aquifer recharge and reduce flows into stormwater conveyance facilities. The project is expected to result in an increase of approximately 30,000 GSF in permeable ground coverage. The project would have no impact on groundwater recharge and no impact to the capacity of stormwater runoff systems.

The project sites are fully developed areas of the hospital complex. The project includes removal of two existing buildings with one project site left redeveloped as a landscaped area and one project site redeveloped as a plaza and landscaped area. The proposed project is expected to result in no change to drainage patterns or the quality of stormwater runoff. The project would have no effect on a stream or river and would have no effect on the existing drainage pattern of the site or an area around the site. The redevelopment of the project sites would include detailed drainage designs to route stormwater from the sites into the same pipes that currently serve the sites with the proposed new landscape areas reducing the amount of expected runoff. No impact would occur.

The proposed does not include residential uses that could be affected by flooding and the site is not located in a 100-year floodplain, as defined by the Federal Emergency Management Agency (FEMA Flood Map 6067C0195H, effective August 2012) and would not place residences or any other type of structure in a 100-year floodplain. The project site is not located near a levee or dam and would not be subject to risk of flooding due to failure of one of these structures. No impact would occur.

The campus is generally flat and is not located in close proximity to any large water bodies, therefore, campus is not subject to inundation by seiche, tsunami, or mudflow. Therefore, no impact would occur.

4.5.4.3 2010 LRDP EIR Mitigation Measures Included in the Proposed Project

Analysis in the 2010 LRDP EIR concluded that all potential impacts to hydrology and water quality as a result of implementation of the 2010 LRDP would be less than significant and no mitigation measures were necessary.

4.5.4.4 Project Impacts and Mitigation Measures

Impact HYDRO-1: Construction and operational activities associated with the proposed project would not contribute substantial loads of sediment or other pollutants in storm water runoff that could degrade receiving water quality. (Less than Significant)

Construction

The proposed project would disturb three sites on the campus which together would involve more than 1 acre of disturbance. Proposed construction and grading activities would include demolition of existing structures, removal of asphalt, site grading, and the operation of heavy equipment. Although the project site is essentially flat and the potential for soil erosion is considered to be low, peak storm water runoff could result in short-term sheet erosion within areas of exposed or stockpiled soils. Furthermore, the compaction of soils by heavy equipment may reduce the infiltration capacity of soils and increase runoff and erosion potential. Given the above, pollutants such as soil, sediments, and other substances associated with construction activities (e.g., oil, gasoline, grease, and surface litter) could enter the local storm drain system.

As discussed above, projects that would disturb areas of 1 acre or more during construction are required to comply with the state's NPDES General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit). The project construction contractor would be required to file a notice of intent to obtain coverage under the Construction General Permit. This permit

requires that a SWPPP be prepared that would include appropriate erosion control measures. In addition, the SWPPP would require that if any spills of materials known to be water pollutants or hazardous materials do occur, the proper agencies would be contacted immediately (if necessary) and appropriate cleanup of the spill would take place as soon as possible. Erosion control measures that would be implemented during site grading and construction would include the use of straw hay bales, straw bale inlet filters, filter barriers, and silt fences. Adherence to the NPDES requirements would ensure that the construction of the proposed project would not substantially degrade surface water quality. Given the above, the implementation of the proposed project would have a less than significant short-term impact on water quality during construction.

Operation

Upon completion of construction, as under existing conditions, stormwater runoff from the three project sites would continue to drain into the City’s combined sewer system, as well the City storm drains and eventually to the American River. Once the proposed project is constructed, the project sites would be under impervious surfaces (buildings, pavement, etc.) and landscaped. This would minimize the potential for erosion and sedimentation in the long term. In addition, post-development peak storm water flows would not exceed pre-development peak storm water flows because there would not be a substantial increase in impervious surfaces on the project sites. In fact the impervious surfaces on the project sites are expected to decrease by about 30,000 square feet. As a result, the amount of runoff entering the City’s storm drain system would not increase relative to existing conditions and would not result in discharge of sediments, or otherwise affect water quality. In addition, in compliance with NPDES Phase II regulations, the Sacramento campus has developed and is implementing a campus-wide Storm Water Management Plan (SWMP). That plan encompasses the entire campus, including the project sites, and includes structural and non-structural BMPs to control the discharge of pollutants into storm water from campus operations. Therefore, the impact from project operations is considered less than significant.

Mitigation Measures: No project-level mitigation measures are required.

4.5.4.5 Cumulative Impacts and Mitigation Measures

The cumulative context for evaluation of hydrology and water quality impacts includes campus development under the 2010 LRDP (including the proposed project) in combination with anticipated development in the City of Sacramento that has the potential to impact the same receiving waters.

Cumulative Impact HYDRO-1: The proposed project, in conjunction with other reasonably foreseeable future development in Sacramento, could increase

the volume of urban runoff, but would not adversely affect receiving water quality. (*Less than Significant*)

Future development in the Sacramento region could affect existing absorption rates, drainage patterns, or the rate of surface runoff. If the development in an area is intensified, natural vegetated pervious groundcover could be converted to impervious surfaces such as paved streets, rooftops, and parking lots that increase runoff rates. Increased development and human activity could cause degradation of surface and groundwater quality in the region. However, for future construction projects in the watershed in the City's jurisdiction, the City would require public or private contractors to comply with the requirements of the City's SQIP. In addition, before the onset of any construction activities, where the disturbed area is one acre or more in size, the City would require any public or private contractors to obtain coverage under the NPDES General Construction Permit and include erosion and sediment control plans. In addition, the City's SQIP would require implementation of post-construction measures to reduce or eliminate water quality problems, including source controls such as reduced surface disturbance, and treatment of polluted runoff such as detention or retention basins (City of Sacramento 2009). The Sacramento campus would also comply with state and federal water quality regulations. As described above in **Impact HYDRO-1**, construction and operational activities associated with implementation of the proposed project would not contribute substantial loads of sediment or other pollutants in storm water runoff that could degrade receiving water quality because the campus would comply with applicable regulatory standards. Therefore, the proposed project's contribution to any cumulative effect on surface and groundwater quality will not be cumulatively considerable.

Mitigation Measures: No project-level mitigation measures are required.

4.5.5 REFERENCES

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4.5 Hydrology and Water Quality

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4.6.1 INTRODUCTION

This section describes the existing ambient noise environment of the UC Davis Sacramento campus, including the sources of existing noise in the project area and the locations of noise-sensitive land uses that potentially could be affected by development of the proposed Hospital Seismic Demolition and Office Replacement project (proposed project). The relevant noise standards and guidelines are also described in this section. The changes in estimated noise levels due to the proposed project are compared to thresholds of significance to determine the significance of the changes in the ambient noise environment that are anticipated to result from implementation of the proposed project.

Comments received regarding noise in response to the Notice of Preparation (NOP) circulated for this EIR requested that the University consider the noise impacts to adjacent properties as part of the noise evaluation for the project. All comment letters received in response to the NOP are provided in **Appendix 1.0** of this Draft EIR.

4.6.2 ENVIRONMENTAL SETTING

4.6.2.1 Background Information on Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its pitch or its loudness. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher-pitched signals sound louder to humans than sounds with a lower pitch. Loudness is the amplitude of sound waves combined with the reception characteristics of the ear. Amplitude may be compared with the height of an ocean wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A decibel (dB) is a unit of measurement which indicates the relative amplitude of a sound. The zero on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, 30 dB is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its level. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in **Table 4.6-1, Definitions of Acoustical Terms**.

**Table 4.6-1
Definitions of Acoustical Terms**

Term	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measures to the reference pressure. The reference pressure for air is 20 μ Pa.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in dB as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dB(A)	The sound pressure level in dB as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period. The hourly L_{eq} used for this report is denoted as dB(A) $L_{eq}(h)$.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 dB in the evening from 7:00 PM to 10:00 PM and after addition of 10 dB to sound levels in the night between 10:00 PM and 7:00 AM.
Day/Night Noise Level, L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 dB to levels measured in the night between 10:00 PM and 7:00 AM.
L_{01} , L_{10} , L_{50} , L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Illingworth & Rodkin, Inc., 2010.

There are several methods of characterizing sound. The most common in California is the A-weighted sound level or dB(A). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dB(A) are shown in **Table 4.6-2, Typical Noise Levels in the Environment**. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq} . The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

**Table 4.6-2
Typical Noise Levels in the Environment**

Common Outdoor Noise Source	Noise Level (dB(A))	Common Indoor Noise Source
	120	
Jet flyover at 300 meters		Rock concert
	110	
Pile driver at 20 meters	100	
	90	Night club with live music
Large truck pass by at 15 meters		
	80	Noisy restaurant
Gas lawn mower at 30 meters		Garbage disposal at 1 meter
Commercial/Urban area daytime	70	Vacuum cleaner at 3 meters
Suburban expressway at 90 meters		Normal speech at 1 meter
Suburban daytime	60	
	50	Active office environment
Urban area nighttime		Quiet office environment
	40	
Suburban nighttime		
Quiet rural areas	30	Library
		Quiet bedroom at night
Wilderness area	20	
Most quiet remote areas	10	Quiet recording studio
Threshold of human hearing	0	Threshold of human hearing

Source: Illingworth & Rodkin, Inc., 2010.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dB(A). Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dB(A).

Since the sensitivity to noise increases during the evening and at night (because excessive noise interferes with the ability to sleep), 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The Community Noise Equivalent Level, (CNEL), is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 PM to 10:00 PM) and a 10 dB addition to nocturnal (10:00 PM to 7:00 AM) noise levels. The Day/Night Average Sound Level (L_{dn}) is essentially the same as CNEL, with the exception that the evening period is dropped and all occurrences during this 3-hour period are grouped into the daytime period.

4.6.2.2 Effects of Noise on Sleep and Speech

The thresholds for speech interference indoors are about 45 dB(A) if the noise is steady and above 55 dB(A) if the noise is fluctuating. Outdoors the thresholds are about 15 dB(A) higher. Steady noise of sufficient intensity, above 35 dB(A), and fluctuating noise levels above about 45 dB(A) have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dB(A) L_{dn} . Typically, the highest steady traffic noise level during the daytime is about equal to the L_{dn} and nighttime levels are 10 dB(A) lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12-17 dB(A) with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dB(A) for an older structure and 25 dB(A) for a newer construction. Sleep and speech interference is therefore possible when exterior noise levels are about 57–62 dB(A) L_{dn} with open windows and 65–70 dB(A) L_{dn} if the windows are closed. Levels of 55–60 dB(A) are common along collector streets and secondary arterials, while 65–70 dB(A) is a typical value for a primary/major arterial. Levels of 75–80 dB(A) are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed; those facing major roadways and freeways typically need sound-rated glass windows.

4.6.2.3 Background Information on Vibration

Vibration is a unique form of noise. It is unique because its energy is carried through structures and the earth, whereas noise is simply carried through the air. Thus, vibration is generally felt rather than heard. Some vibration effects can be caused by noise, for example, the rattling of windows from truck pass-bys. This phenomenon is related to the coupling of the acoustic energy at frequencies that are close to the resonant frequency of the material being vibrated. Typically, groundborne vibration generated by manmade activities attenuates rapidly as distance from the source of the vibration increases. Vibration, which spreads through the ground rapidly, diminishes in amplitude with distance from the source. The ground motion caused by vibration is measured as particle velocity in inches per second and in the United States is referenced as vibration decibels (VdB).

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is barely perceptible. **Table 4.6-3, Typical Levels of Groundborne Vibration**, identifies typical groundborne vibration levels in VdB and human response to different levels of vibration.

In addition to human annoyance and interference with human activities such as sleep, groundborne vibrations can also affect buildings. A vibration level of 100 VdB is the general threshold where minor damage can occur in fragile buildings.

4.6.2.4 Project Sites and Surrounding Land Uses

The three project sites together make up approximately three acres within the 142 acre UC Davis Sacramento campus (Sacramento campus). The project sites are surrounded by hospital and residential uses and are approximately 0.25 mile to the south of US 50. Regional commercial uses, low-density and high-density residential neighborhoods, various state and local government buildings, and a public school are located in the immediate vicinity of the Sacramento campus. Sensitive noise uses include the adjacent hospital building with patient rooms approximately 10 feet from the project site and nearby residential uses approximately 40 feet from the proposed landscape buffer construction; 160 feet from the Housestaff Building demolition; 150 feet from the North Addition Office Building construction; and 190 feet from the North/South Wing demolition.

Roadways and Freeways

The campus is in an area with heavy roadway and freeway traffic, outside of residential neighborhoods including traffic along Stockton Boulevard and Broadway that are adjacent to the campus. The major roadways affect noise levels in the project area.

**Table 4.6-3
Typical Levels of Groundborne Vibration**

Human/Structural Response	Velocity Level in VdB (dB(A))	Typical Sources 50 feet from Source
Threshold, Minor Cosmetic Damage to Fragile Buildings	100	Blasting from Construction Projects
Difficulty with Tasks such as Reading a VDT Screen	90	Bulldozer and Other Heavy-Tracked Construction Equipment
		Commuter Rail, Upper Range
Residential Annoyance, Infrequent Events (E.G., Commuter Rail)	80	Rapid Transit, Upper Range
Residential Annoyance, Frequent Events (E.G., Rapid Transit)	70	Commuter Rail, Typical
		Bus or Truck Over Bump
Limit for Vibration Sensitive Equipment Approximate Threshold for Human Perception of Vibration	60	Rapid Transit, Typical
		Bus or Truck, Typical
Average Residence without Stereo Playing Average Whisper	50	Typical Ground Vibration

Source: Federal Transit Administration, 1998.

Stationary Sources

Stationary noise sources associated with the project include common building mechanical equipment such as air conditioners and ventilation systems. These noise sources become a concern when they are in close proximity of land uses where people would be sensitive to elevated noise levels.

Ambient Noise Levels

An environmental noise impact assessment was conducted for the 2010 LRDP EIR. The study involved the monitoring of ambient noise levels at various locations on and near the Sacramento campus and modeling of future noise levels based on projections of future traffic volumes through the year 2025 prepared by Fehr & Peers Associates for the LRDP EIR. Ambient noise levels were monitored by Illingworth & Rodkin, Inc., on January 27 and 28, 2010. Short-term measurements (15 minutes in duration) were taken at 10 locations and unattended long-term (24 hours in duration) measurements were taken at three locations. The measurement locations are shown in **Figure 4.6-1, Noise Measurement Locations**. The off-campus long term noise measurement locations were selected to be representative of noise-sensitive residential receptors at the campus periphery that are most likely to be affected by the additional noise that would be generated by 2010 LRDP-related noise sources. On-campus long term noise measurements were conducted near the Campus Central Plant to document noise emissions from this facility. Except near the Central Plant or other discrete noise sources, on-campus noise levels are judged to be at or below the levels documented at the project periphery therefore additional on-campus long term measurement locations were considered not necessary. Measured data reported in the environmental noise assessment are shown in **Table 4.6-4, Long-Term Noise Measurement Data Summary**, and **Table 4.6-5, Short-Term Noise Measurement Data Summary**. As shown in **Table 4.6-4**, below, the measured ambient noise levels vary from 59 to 66 dB(A) L_{eq} in the Sacramento campus vicinity.

**Table 4.6-4
Long-Term-Noise Measurement Data Summary**

Site ID	Measurement Location	Measurement Date	24-hr L_{eq} (dB(A))	24-hr L_{dn} (dB(A))
LT-1	Utility pole at the edge of the single-family residential area north of V Street opposite the hospital emergency/loading entrance	1/27/10–1/28/10	66	67
LT-2	Utility pole at residential property line at end of Y Street (eastern edge of the campus)	1/27/10–1/28/10	59	61

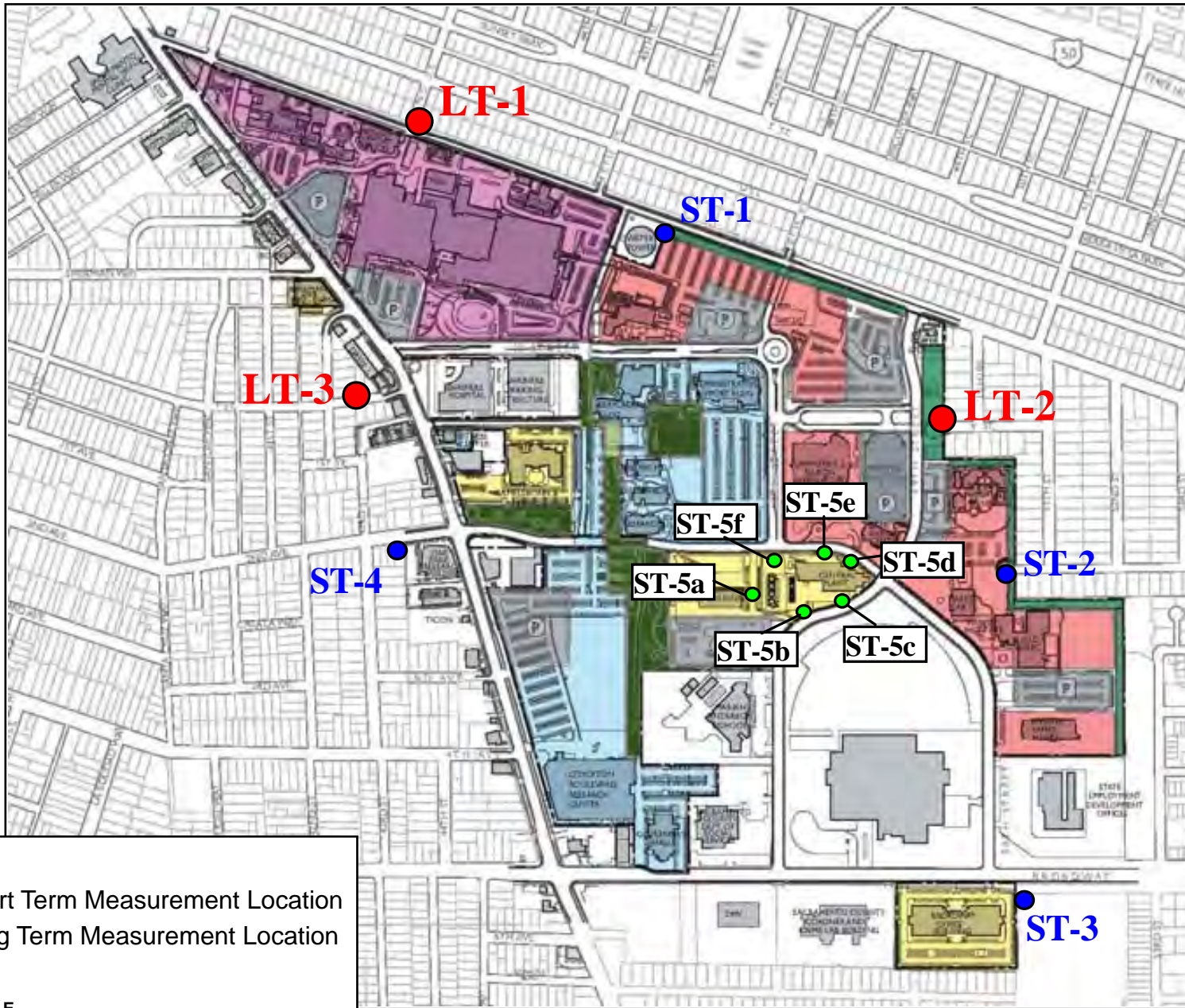
Site ID	Measurement Location	Measurement Date	24-hr L _{eq} (dB(A))	24-hr L _{dn} (dB(A))
LT-3	Light standard in residential area at the western edge of the campus (approximately 20 feet from the centerline of Y Street and 200 feet from the centerline of Stockton Blvd)	1/27/10–1/28/10	62	63

Table 4.6-5, Short-Term-Noise Measurement Data Summary, shows the results of the short-term measurements. The measured ambient noise levels vary from 52 to 62 dB(A) L_{eq} along the campus perimeter.

**Table 4.6-5
Short-Term Noise Measurement Data Summary**

Site No.	Measurement Location	Date	Noise Level in dB(A)		
			Noise Sources	L _{eq}	L _{dn}
ST-1	V Street near Emergency Room	1/28/10	Traffic	52	53
ST-2	Residence at 2 nd Avenue Opposite M.I.N.D. Institute Lab and Clinic	1/28/10	Traffic	53	60
ST-3	Broadway Senior Center	1/28/10	Traffic	61	68
ST-4	Residential area near 2 nd Avenue and Stockton Boulevard	1/28/10	Traffic	62	67
ST-5a	Perimeter of Central Plant; Near Facility Support Services Building	1/28/10	Central Plant/mechanical equipment	68	68
ST-5b	Perimeter of Central Plant	1/28/10	Central Plant/mechanical equipment	54	59
ST-5c	Perimeter of Central Plant	1/28/10	Central Plant/mechanical equipment	55	59
ST-5d	Perimeter of Central Plant	1/28/10	Central Plant/mechanical equipment	56	60
ST-5e	Perimeter of Central Plant	1/28/10	Central Plant/mechanical equipment	59	61
ST-5f	Perimeter of Central Plant	1/28/10	Central Plant/mechanical equipment	59	61

Source: Illingworth & Rodkin, 2010.



Legend:

- ST = Short Term Measurement Location
- LT = Long Term Measurement Location



NOT TO SCALE

SOURCE: Illingworth & Rodkin, Inc. – February 2010

FIGURE 4.6-1

Noise Measurement Locations

Aircraft Overflights

The closest airport is Executive Airport, located approximately three miles southwest of the project sites. While noise from aircraft overflights is occasionally perceptible within the project area, it does not substantially affect the noise environment.

Emergency Helicopter Operations

The project sites are currently exposed to noise from helicopter take-off and landing operations associated with the transport of patients requiring urgent care.

4.6.3 REGULATORY CONSIDERATIONS

State Building Code

The interior noise environment inside hospital and clinic patient rooms is subject to the environmental noise standards set forth in Appendix Chapter 35 sec. 3501 of the California State Building Code (Part 2, Title 24, CCR). The purpose of the regulations as stated therein is to establish uniform minimum noise insulation performance standards to protect persons within new hotels, motels, dormitories, long-term care facilities, apartment houses, and dwellings, other than detached single-family dwellings from the effects of excessive noise, including but not limited to, hearing loss or impairment and interference with speech and sleep.

4.6.3.1 Local Plans and Policies

The Sacramento campus is a University of California campus that conducts work within the University's mission on land that is owned or controlled by The Board of Regents of the University of California. As a state entity, the University is exempt under the state constitution from compliance with local land use regulations, including general plans, zoning, and ordinances. However, the University seeks to develop its property in a manner that minimizes potential conflicts with the land use policies and plans of local jurisdictions to the extent feasible. The Sacramento campus is located in the City of Sacramento. The following subsection summarizes policies contained in the City of Sacramento General Plan regarding noise, as well as the City of Sacramento Noise Ordinance and provides context for the impact analysis.

City of Sacramento General Plan

The City of Sacramento's General Plan Noise Element contains the City's goals and policies for controlling and reducing environmental noise in the City of Sacramento. Generally, the compatible noise level for most residential uses and hotel/motel uses is 65 dB(A) L_{dn} or less, while conditionally acceptable

noise levels range from over 60 dB(A) L_{dn} to 70 dB(A) L_{dn} (may require insulation, etc.). Noise levels over 70 dB(A) L_{dn} are, in general, incompatible with residential uses.

The City of Sacramento General Plan policies pertaining to noise include the following:

Goal EC 3.1 Noise Reduction: Minimize noise impacts on human activity to ensure the health and safety of the community.

Policy EC 3.1.1: Exterior Noise Standards: The City shall require noise mitigation for all development where the projected exterior noise levels exceed those shown in Table EC 1 [**Table 4.6-6, General Plan Exterior Noise Compatibility Standards for Various Land Uses**, below], to the extent feasible.

Policy EC 3.1.2: Exterior Incremental Noise Standards: The City shall require noise mitigation for all development that increases existing noise levels by more than the allowable increment shown in Table EC 2 [**Table 4.6-7, General Plan Exterior Incremental Noise Impact Standards for Noise-Sensitive Uses (dB(A))**, below], to the extent feasible.

Policy EC 3.1.3: Interior Noise Standards: The City shall require new development to include noise mitigation to assure acceptable interior noise levels appropriate to the land use type: 45 dB(A) L_{dn} for residential, transient lodgings, hospitals, nursing homes and other uses where people normally sleep; and 45 dB(A) L_{dn} (peak hour) for office buildings and similar uses.

Policy EC 3.1.4: Interior Noise Review for Multiple, Loud Short-Term Events: In cases where new development is proposed in areas subject to frequent, high-noise events (such as aircraft over-flights, or train and truck pass-bys), the City shall evaluate noise impacts on any sensitive receptors from such events when considering whether to approve the development proposal, taking into account potential for sleep disturbance, undue annoyance, and interruption in conversation, to ensure that the proposed development is compatible within the context of its surroundings.

Policy EC 3.1.5: Interior Vibration Standards: The City shall require construction projects anticipated to generate significant amount of vibration to ensure acceptable interior vibration levels at nearby residential and commercial uses based on the current City or Federal Transit Administration (FTA).

- Policy EC 3.1.7: Vibration: The City shall require an assessment of the damage potential of vibration-induced construction activities, highways, and rail lines in close proximity to historic buildings and archaeological sites and require all feasible mitigation measures be implemented to ensure no damage would occur.
- Policy EC 3.1.8: Operational Noise: The City shall require mixed-use, commercial, and industrial projects to mitigate operational noise impacts to adjoining sensitive uses when operational noise thresholds are exceeded.
- Policy EC 3.1.10: Construction Noise: The City shall require development projects subject to discretionary approval to assess potential construction noise impacts on nearby sensitive uses and to minimize impacts on these uses, to the extent feasible.
- Policy EC 3.1.8: Operational Noise: The City shall require mixed-use, commercial, and industrial projects to mitigate operational noise impacts to adjoining sensitive uses when operational noise thresholds are exceeded.

**Table 4.6-6
General Plan Exterior Noise Compatibility Standards for Various Land Uses**

Land Use Type	Highest Level of Noise Exposure regarded as 'Normally Acceptable' ^a (L _{dn} ^b or CNEL ^c)
Low Density Residential - Single Family, Duplex, Mobile Homes	60 dB(A) ^{d,e}
High Density Residential - Multi-family	65 dB(A)
Urban Residential Infill ^f and Mixed-Use Projects ^g	70 dB(A)
Transient Lodging—Motels, Hotels	65 dB(A)
Schools, Libraries, Churches, Hospitals, Nursing Homes	70 dB(A)
Auditoriums, Concert Halls, Amphitheaters	Mitigation based on site-specific study
Sports Arena, Outdoor Spectator Sports	Mitigation based on site-specific study
Playgrounds, Neighborhood Parks	70 dB(A)
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75 dB(A)
Office Buildings—Business, Commercial and Professional	70 dB(A)
Industrial, Manufacturing, Utilities, Agriculture	75 dB(A)

a. As defined in the Guidelines, "Normally Acceptable" means that the "specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements."

b. L_{dn} or Day Night Average Level is an average 24-hour noise measurement that factors in day and night noise levels.

c. CNEL or Community Noise Equivalent Level measurements are a weighted average of sound levels gathered throughout a 24-hour period.

d. dB(A) or A-weighted decibel scale is a measurement of noise levels.

e. The exterior noise standard for the residential area west of McClellan Airport known as McClellan Heights/Parker Homes is 65 dB(A).

f. With land use designations of Central Business District, Urban Neighborhood (Low, Medium, or High) Urban Center (Low or High), Urban Corridor (Low or High).

g. All mixed-use projects located anywhere in the City of Sacramento.

Source: City of Sacramento 2008; Governor's Office of Planning and Research, State of California General Plan Guidelines 2003, October 2003

**Table 4.6-7
General Plan Exterior Incremental Noise Impact Standards for Noise-Sensitive Uses (dB(A))**

Residences and buildings where people normally sleep ^a		Institutional land uses with primarily daytime and evening uses ^b	
Existing L _{dn}	Allowable Noise Increment	Existing Peak Hour L _{eq}	Allowable Noise Increment
45	8	45	12
50	5	50	9
55	3	55	6
60	2	60	5
65	1	65	3
70	1	70	3
75	0	75	1
80	0	80	0

a. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.

b. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material.

Source: City of Sacramento 2008; Federal Transit Administration, Transit Noise Impact and Vibration Assessment, May 2006

Sacramento City Code Noise Ordinance

Chapter 8.68 of the Sacramento City Code governs noise and vibration within the City. Section 8.68.100 sets the limits for permissible stationary source noise levels during the day and night for all agricultural and residential properties.

8.68.060 Exterior Noise Standards

A. The following noise standards unless otherwise specifically indicated in this article shall apply to all agricultural and residential properties.

- 1. From 7 AM to 10 PM the exterior noise standard shall be 55 dB(A).*
- 2. From 10 PM to 7 AM the exterior noise standard shall be 50 dB(A).*

*B. It is unlawful for any person at any location to create any noise which causes the noise levels when measured on agricultural or residential property to exceed for the duration of time set forth following [shown in **Table 4.6-8, City of Sacramento Noise Ordinance Cumulative Intrusive Sound Limits**], the specified exterior noise standards in any 1 hour by:*

**Table 4.6-8
City of Sacramento Noise Ordinance Cumulative Intrusive Sound Limits**

Cumulative Duration of the Intrusive Sound	Allowable Decibels
Cumulative period of 30 minutes per hour	0
Cumulative period of 15 minutes per hour	+5
Cumulative period of 5 minutes per hour	+10
Cumulative period of 1 minute per hour	+15
Level not to be exceeded for any time per hour	+20

Source: Sacramento City Code, Chapter 8.68, Section 8.68.060, 2009

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8.68.070 Interior Noise Standards

- A. *In any apartment, condominium, townhouse, duplex or multiple dwelling unit it is unlawful for any person to create any noise from inside his or her unit that causes the noise level when measured in a neighboring unit during the periods 10 PM to 7 AM to exceed:*
1. *45 dB(A) for a cumulative period of more than 5 minutes in any hour;*
 2. *50 dB(A) for a cumulative period of more than 1 minute in any hour;*
 3. *55 dB(A) for any period of time.*
- B. *If the ambient noise level exceeds that permitted by any of the noise level categories specified in subsection A of this section, the allowable noise limit shall be increased in 5 dB(A) increments in each category to encompass the ambient noise level.*

8.68.080 Exemptions

The following applicable activities shall be exempted from the provisions of this chapter:

- A. *School bands, school athletic and school entertainment events. School entertainment events shall not include events sponsored by student organizations.*
- B. *Outdoor gatherings, public dances, shows and sporting and entertainment events provided said events are conducted pursuant to a discretionary license or permit by the city or county.*
- C. *Activities conducted on parks and public playgrounds, provided such parks and public playgrounds are owned and operated by a public entity.*
- D. *Any mechanical device, apparatus or equipment related to or connected with emergency activities or emergency work.*
- E. *Noise sources due to the erection (including excavation), demolition, alteration or repair of any building or structure between the hours of 7 AM and 6 PM, on Monday, Tuesday,*

Wednesday, Thursday, Friday and Saturday, and between 9 AM and 6 PM on Sunday; provided, however, that the operation of an internal combustion engine shall not be exempt pursuant to this subsection if such engine is not equipped with suitable exhaust and intake silencers which are in good working order. The director of building inspections may permit work to be done during the hours not exempt by this subsection in the case of urgent necessity and in the interest of public health and welfare for a period not to exceed three days. Application for this exemption may be made in conjunction with the application for the work permit or during progress of the work.

H. Noise sources associated with maintenance of street trees and residential area property provided said activities take place between the hours of 7 AM and 6 PM.

8.68.100 Schools, Hospitals and Churches

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church while the same is in use to exceed the noise standards specified in Section 8.68.060 of this chapter or to create any noise which unreasonably interferes with the use of such institution or unreasonably disturbs or annoys patients in the hospital. In any disputed case, interfering noise which is 10 dB(A) or more, greater than the ambient noise level at the building, shall be deemed excessive and unlawful.

4.6.4 IMPACTS AND MITIGATION MEASURES

4.6.4.1 Significance Criteria

The impact of the proposed project related to noise would be considered significant if it would exceed the following standards of significance, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook.

- Expose people to or generate noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies;
- Expose people to or generate excessive ground-borne vibration or ground-borne noise levels;
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- Result in exposure of people residing or working in the project area to excessive noise levels if the project is located within an area covered by an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport; or
- Result in exposure of people residing or working in the project area to excessive noise levels if the project is located in the vicinity of a private airstrip.

To assess whether the proposed project would expose persons to or generate noise levels that are excessively high, the EIR evaluates the absolute change in noise levels due to the project and the relationship between the resultant noise level and the City of Sacramento's established guidelines for satisfactory noise and land use compatibility.

Traffic Noise

According to the City of Sacramento General Plan, a significant noise impact would result if exterior noise levels increase substantially at noise-sensitive land uses (e.g., residences). For the purposes of this EIR, noise impacts would be considered significant if the project-related noise exceeded the allowable noise increment at locations that affect human receptors, as specified on **Table 4.6-7**.

Stationary Source Noise

A significant impact due to stationary mechanical equipment noise at adjacent noise-sensitive land uses would be identified if noise levels produced by this equipment exceed 55 dB(A) during the daytime and 50 dB(A) at night as modified by the cumulative hourly duration factors shown in **Table 4.6-8**.

Construction and Demolition Noise

Construction and demolition-related noise activities between the hours of 7:00 AM and 6:00 PM, on Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday, and between 9:00 AM and 6:00 PM on Sunday are exempt from noise standards of the City of Sacramento Noise ordinance. However, the City of Sacramento 2030 General Plan requires an assessment of potential construction noise impacts on nearby sensitive uses to minimize impacts on these uses. While the University is not subject to the local land use plans, policies or regulations, construction and demolition-noise associated with the 2010 LRDP was analyzed using the City's standards to assess whether the projects implemented as part of campus development under the 2010 LRDP would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without project. Noise impacts would be considered significant if construction activities produce noise levels above 70 dB(A) during the daytime and/or 55 dB(A) at night at the nearest sensitive receptor and which effect the same noise sensitive receptors on a continuous basis for a period of 90 days or more (LRDP EIR 2010).

Vibration

The City's General Plan noise element provides requirements for interior vibration standards and damage to historic or archaeological structures, but does not provide specific vibration thresholds. In the absence of significance thresholds for vibration from construction, the Federal Railroad Administration was utilized (FRA) which identifies a maximum acceptable level threshold of 65 VdB for buildings where low ambient vibration is essential for interior operations (such as hospitals and recording studios), 72 VdB for residences and buildings where people normally sleep, and 75 VdB for institutional land uses with primary daytime use (such as churches and schools).

4.6.4.2 Methodology

Information presented in the discussion and analysis was obtained from site visits, project sequencing details shown in **Section 3.0**, and the environmental noise assessment prepared for the 2010 LRDP EIR noise section.

4.6.4.3 2010 LRDP EIR Mitigation Measures Included in the Proposed Project

Table 4.6-9, 2010 LRDP EIR Mitigation Measures, presents the mitigation measures in the 2010 LRDP EIR that are applicable to the proposed project. Since these previously adopted mitigation measures are already being carried out as part of implementation of the 2010 LRDP, they are included in and are a part of the proposed project and will not be readopted. Implementation of these mitigation measures is assumed as part of the project impact analysis.

**Table 4.6-9
2010 LRDP EIR Mitigation Measures**

Mitigation Measure	Description
LRDP Mitigation Measure NOI-1	<p>The following mitigation measures are proposed to reduce noise generated by demolition and construction activities:</p> <ul style="list-style-type: none"> • Erect temporary noise control blanket barriers in a manner to shield adjacent off-campus residences and on-campus occupied facilities at the perimeter of construction staging areas, at the perimeter of ground clearing, excavation, or demolition sites, and at elevated construction sites (i.e., multistory buildings). When feasible, barriers will be erected at or near the work site itself to provide the most noise attenuation. • Where construction is adjacent to on-site or off-site sensitive receptors, construct a noise barrier 8 to 10 feet in height at the project site perimeter that will break the line-of-sight between construction equipment and noise receptors, where feasible.

Mitigation Measure	Description
	<ul style="list-style-type: none"> • Limit significant noise-generating construction activities, including truck traffic coming to and from the site for any purpose, to the hours of 7:00 AM to 6:00 PM Monday through Saturday, and 9:00 AM to 6:00 PM on Sundays and Holidays. • Properly muffle and maintain all construction equipment powered by internal combustion engines. • Prohibit unnecessary idling of internal combustion engines. • Locate all stationary noise-generating construction equipment, such as air compressors and cranes, as far as practical from existing nearby residences and other noise-sensitive land uses. Acoustically shield such equipment. • Select quiet construction equipment, particularly air compressors, whenever possible. (Fit motorized equipment with proper mufflers in good working order). • Minimize construction traffic along V Street. <p>The Government and Community Relations office will be responsible for responding to any local complaints about construction noise. The office would determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and would require that reasonable measures warranted to correct the problem be implemented. Conspicuously post a telephone number for the office at the construction site and include it in the notice sent to neighbors regarding the construction schedule.</p>
LRDP Mitigation Measure NOI-2	For construction adjacent to off-site residential uses, advance notice will be given to occupants of these uses to ensure that precautions are taken to protect ongoing activities from vibration effects.
LRDP Mitigation Measure NOI-4	Mechanical equipment and building design shall be selected so that noise levels from future building and other facility operations would not exceed the Noise Ordinance limits of the City of Sacramento for commercial areas or residential zones as measured on any noise-sensitive receptor in the area surrounding the Sacramento campus. Controls that would typically be incorporated to attain adequate noise reduction would include selection of quiet equipment, sound attenuators on fans, sound attenuator packages for cooling towers and emergency generators, acoustical screen walls, and equipment enclosures.

Source: UC Davis Sacramento Campus, 2010 LRDP EIR, Section 4.10, Noise.

4.6.4.4 Project Impacts and Mitigation Measures

Impact NOI-1: Construction of the proposed project would expose existing off-site and on-site receptors to elevated noise levels. (*Potentially Significant; Significant and Unavoidable*)

The proposed project would include intermittent construction and demolition activities during a four year period and would include ground clearing, building demolition, earthmoving, foundations, erection of structures, and finishing. Noise effects resulting from construction and demolition would depend on the noise generated by various pieces of construction equipment, the timing and duration of the noise-generating activities, and the distance and shielding between construction noise sources and noise-sensitive areas. Certain activities such as removal of interior furnishings, building abatement, and site preparation activities would produce very low levels of exterior noise. Other activities such as excavation, concrete demolition, jackhammering, and concrete crushing would produce very loud levels of exterior noise. The typical range of average (L_{eq}) noise levels at 50 feet from a given construction area is shown in **Table 4.6-10, Typical Construction Noise Levels**, below. **Table 4.6-10** shows noise levels when all equipment for the work phase is used at a site and noise levels when the minimum required equipment is used.

**Table 4.6-10
Typical Construction Noise Levels**

Construction Activity	Typical Noise Level (L_{eq}) ¹ 50 feet from Source	
	All pertinent equipment present on site	Minimum required equipment present on site
Ground Clearing	84	83 to 84
Demolition and Excavation	89	71 to 79
Foundations	77 to 78	77 to 78
Erection	84 to 87	72 to 75
Finishing ²	89	74 to 75

¹ Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

² Finishing includes dry wall and insulation installation, interior and exterior painting, and interior improvements such as flooring, etc.

Source: U.S. Environmental Protection Agency, *Noise from Construction Equipment and Building Operations, Building Equipment, and Home Appliances*, December 1971.

As shown in **Table 4.10-9**, the highest exterior noise level from construction and demolition activities would be 89 dB(A) L_{eq} . This noise level could be reached during the demolition, excavation and finishing phases. Noise levels from these activities would drop at a rate of about 6 dB(A) per doubling of distance between the source and receptor, and the maximum exterior noise levels would be about 83 dB(A) L_{eq} at 100 feet. In addition, shielding by buildings or terrain could result in lower noise levels at distant receptors. The proposed sequencing for the demolition of the North/South Wing of the Main Hospital would result in demolition proceeding from the south to the north. This effort would leave the north portion of the building in place as a noise barrier between the residences north of V Street during most of the building demolition. Lastly, indoor noise levels would be approximately 12 dB lower for rooms with open windows and 20 to 25 dB lower for rooms with closed windows. Therefore, construction related activities could result in interior noise levels of up to 64 to 69 dB(A) if windows are closed.

Demolition and construction activities would occur while the Sacramento campus facilities, including the hospital, are operational. Activities occurring directly adjacent to the occupied buildings would generate significant noise levels. Though the actual exterior to interior attenuation provided by the hospital buildings is not known, patient rooms typically have fixed glazing and are built with greater exterior to interior attenuation than typical residential uses, thus patient rooms at the hospital would be expected to achieve a minimum exterior to interior noise reduction of 25 dB(A). The construction could be closer than 50 feet away from off-site receptors and within 10 feet of on-site receptors, which would increase interior noise levels above 64 dB(A) with windows closed.

The Campus has procedures in place that lessen the impact of construction noise to on-site sensitive receptors, such as patients, surgical units and research units. It is standard practice for the Campus to identify noise-producing activities on the construction schedule, and then coordinate the timing of the activities with hospital or research units that would likely be affected and, if necessary close particular rooms in order to not place patients or employees in close proximity to noisy areas. Further, construction managers can be contacted by hospital or research units in the event that noise becomes too disruptive, and the activities are adjusted or rescheduled at a less sensitive time. With these procedures in place, the impact to on-site sensitive receptors would be less than significant.

In addition to on-campus patient rooms and other receptors, noise-sensitive residential uses are located adjacent to the Sacramento campus. As described above, the majority of the activity would generate noise levels below 89 dB(A) at a distance of 50 feet from the noise source but some activities, especially demolition, would generate up to 89 dB(A) L_{eq} . The nearest off-site residential receptors would be 40 feet from construction of the proposed landscape buffer on the south side of V Street, 150 feet from the North Addition Office Building construction, 190 feet from the Sequence 7 of the North/South Wing demolition, and 160 feet from the Housestaff Building demolition. Based on these distances, unshielded maximum

average noise levels during the loudest demolition and construction activities in these areas could reach a L_{eq} of 81 to 89 dB(A), which would exceed the daytime standard of 70 dB(A) for noise-sensitive residential uses by 11 to 19 dB(A). Therefore, demolition and construction activities associated with the proposed project would result in temporarily increased noise levels at noise-sensitive residential uses off site that would exceed applicable thresholds.

The 2010 LRDP EIR identified **LRDP Mitigation Measure NOI-1** to reduce noise generated by demolition and construction activities. This mitigation measure was adopted as part of the 2010 LRDP and is considered part of the proposed project. The mitigation measure includes the following noise control measures.

- Erect temporary noise control blanket barriers in a manner to shield adjacent off-campus residences and on-campus occupied facilities at the perimeter of construction staging areas, at the perimeter of ground clearing, excavation, or demolition sites, and at elevated construction sites (i.e., multistory buildings). When feasible, barriers will be erected at or near the work site itself to provide the most noise attenuation.
- Where construction is adjacent to on-site or off-site sensitive receptors, construct a noise barrier 8 to 10 feet in height at the project site perimeter that will break the line-of-sight between construction equipment and noise receptors, where feasible.
- Limit significant noise-generating construction activities, including truck traffic coming to and from the site for any purpose, to the hours of 7:00 AM to 6:00 PM Monday through Saturday, and 9:00 AM to 6:00 PM on Sundays and Holidays.
- Properly muffle and maintain all construction equipment powered by internal combustion engines.
- Prohibit unnecessary idling of internal combustion engines.
- Locate all stationary noise-generating construction equipment, such as air compressors and cranes, as far as practical from existing nearby residences and other noise-sensitive land uses. Acoustically shield such equipment.
- Select quiet construction equipment, particularly air compressors, whenever possible. (Fit motorized equipment with proper mufflers in good working order).
- Minimize construction traffic along V Street.
- The Government and Community Relations office will be responsible for responding to any local complaints about construction noise. The office would determine the cause of the noise complaint (e.g., starting too early,

bad muffler, etc.) and would require that reasonable measures warranted to correct the problem be implemented. Conspicuously post a telephone number for the office at the construction site and include it in the notice sent to neighbors regarding the construction schedule.

With implementation of **LRDP Mitigation Measure NOI-1**, construction noise impacts on both off-site and on-site sensitive receptors would be reduced for most construction and demolition efforts of the proposed project. However, it is possible that construction noise from specific sequences of the proposed Hospital Seismic Demolition and Office Replacement project would not be controlled adequately by these mitigation measures and that the resulting exterior noise levels received at the nearby off-site receptors could exceed 70 dB(A) during the daytime. This impact was identified in the 2010 LRDP EIR as significant and unavoidable. Based on the project-specific analysis, this impact is also determined to be a significant impact of the Hospital Seismic Demolition and Office Replacement project.

In compliance with CEQA that requires a project to examine additional ways to reduce a significant impact that cannot be fully mitigated using the program EIR mitigation measures (in this case the LRDP EIR mitigation measure noted above), a project-specific **Mitigation Measure NOI-1** is proposed. This measure includes the following items to assist with reducing noise levels and the impact of demolition/construction noise on nearby receptors.

Mitigation Measures:

NOI-1: For each sequence of the North Addition Office Building construction and the North/South Wing demolition, the following actions will be completed.

- a) The Campus will conduct noise reduction analysis for each sequence of the proposed project. Each sequence will be evaluated once equipment details and exact field conditions for that sequence are known in order to forecast whether the expected exterior noise levels will be below 70 dB(A) during the daytime at the affected sensitive receptors.
- b) In addition to **LRDP Mitigation Measure NOI-1**, if the noise reduction analysis completed per item (a) above reveals impacts above the 70 dB(A) threshold, the Campus will modify construction methods to reduce noise impacts to the greatest extent feasible, taking into account cost and sequencing constraints. The Campus will utilize the results of the noise reduction analysis to consider alternative construction/demolition techniques, revised equipment usage dates, specific placement of noise reduction barriers, and alternative equipment to reduce noise.

- c) Utilizing LRDP EIR noise measurement site LT-1 as a long-term noise monitoring site, the Campus will monitor noise levels throughout the project period to evaluate the effectiveness of **LRDP Mitigation Measure NOI-1** and items (a) and (b) above. The monitoring effort will relay to project managers any instances where exterior noise levels at the project boundary exceed 70 dB(A) during the daytime. This data shall be used to evaluate the effectiveness of items (a) and (b), so that actual field conditions produced by the proposed project are compared to the analysis results in item (a). If the analysis results differ from the actual field conditions, project managers shall verify that the items prescribed as a result of item (b) have been properly implemented and adjust equipment usage or noise barriers to reduce noise levels to the greatest extent.
- d) If item (c) indicates a potential phase that will exceed the 70 dB(A) daytime threshold, such phases shall be limited to the hours of 8:30 AM to 3:30 PM.
- e) The Campus will notify nearby residents of expected periods with noise that could exceed the 70 dB(A) threshold. Based on the noise reduction analysis conducted above in item (b), nearby residents will be notified of the specific days when noise levels are expected to exceed the 70 dB(A) threshold.

Significance after Mitigation: With the implementation of the proposed mitigation measure, the impact related to construction and demolition noise would be reduced but is still considered Significant and Unavoidable because the effectiveness of these combined items cannot be quantified and it cannot be established with certainty that construction noise levels will never exceed the construction noise threshold.

Impact NOI-2: Construction of the proposed project would not expose sensitive receptors to excessive ground vibration. (*Less than Significant*)

Sensitive receptors on campus, such as patients, surgical units and research units could be exposed to excessive groundborne vibration or groundborne noise levels from construction and demolition activities of the proposed project. In addition, it is possible that residential uses located adjacent to the Sacramento campus could be exposed to excessive groundborne vibration or groundborne noise levels from construction activities, but to a lesser degree given the distance of these uses from construction activities that would occur on campus. Ground vibrations from construction activities very rarely reach the levels that can damage structures, but they can achieve the audible range and be felt in buildings very close to

the site. The primary and most intensive vibration source associated with the proposed project would be the use of construction and demolition equipment. Although no pile driving would occur during construction, heavy equipment would be used that could result in ground vibrations. **Table 4.6-11, Vibration Source Levels for Construction Equipment**, below, lists vibration source levels that could result from the construction equipment that would be used for project demolition and construction.

Table 4.6-11
Vibration Source Levels for Construction Equipment

Equipment	Approximate VdB			
	25 Feet	50 Feet	75 Feet	100 Feet
Large Bulldozer	87	81	77	75
Loaded trucks	86	80	76	74
Jackhammer	79	73	69	67
Small Bulldozer	58	52	48	46

Source: Federal Railroad Administration, 2005

As indicated in **Table 4.6-11**, large bulldozers are capable of producing approximately 87 VdB at 25 feet, with vibrations dropping off to 75 VdB at 100 feet. The closest location where vibration levels could be experienced by sensitive receptors could be approximately 25 feet, and would include existing sensitive receptors on campus, including hospital nursing units, surgical units and research units. The Campus has procedures in place that lessen the impact of construction vibration to on-site sensitive receptors, such as patients, surgical units and research units. It is standard practice for the Campus to identify vibration-producing activities on the construction schedule, and then coordinate the timing of the activities with hospital or research units that would likely be affected. Further, construction managers can be contacted by hospital or research units in the event that vibration becomes too disruptive, and the activities can be adjusted or rescheduled at a less sensitive time. Also demolition activities are modified to reduce vibration impacts. For example, the Campus does not use vibration generating demolition techniques such as wrecking balls or explosives to demolish structures. With these procedures in place, the impact to on-site sensitive receptors would be less than significant.

In addition to on-campus patient rooms and other receptors, vibration-sensitive residential uses are located adjacent to the Sacramento campus. These receptors would be 40 feet from construction of the proposed landscape buffer on the south side of V Street, 150 feet from the North Addition Office Building construction, 190 feet from the Sequence 7 of the North/South Wing demolition, and 160 feet from the Housestaff Building demolition. Based on these distances, residential uses could be exposed to vibration levels of approximately 75 VdB from the operation of large bulldozers and approximately 67 VdB from

the use of jackhammers. As noted above, a vibration level of 72 VdB is used as threshold for residences and buildings where people normally sleep. Therefore, at certain times, especially when large bulldozers are in use, the proposed project could result in temporarily elevated vibration levels at vibration-sensitive residential uses that exceed the vibration threshold for this land use and **LRDP Mitigation Measure NOI-2** (requiring notification of nearby people) would be applicable to the project. While **LRDP Mitigation Measure NOI-2** could reduce the potential impact to a less than significant level, an additional mitigation measure (**Mitigation Measure NOI-2** is proposed) Furthermore, all construction and demolition activities will be conducted during daytime hours, consistent with the City's Noise Ordinance. Therefore, the impact related to construction-phase vibrations would be less than significant.

Mitigation Measures:

NOI-2: For each sequence of work near Colonial Way and within 100 feet of nearby residences, the University shall select smaller bulldozers, rubber-tire equipment if possible, and avoid heavy-duty tracked equipment whenever feasible.

Significance after Mitigation: With the implementation of the proposed mitigation measure, the impact related to construction and demolition noise and vibration would be further reduced. The potential impact would be less than significant.

Impact NOI-3: **Vehicular traffic associated with the proposed project would result in an incremental, but imperceptible, long-term increase in ambient noise levels. (*Less than Significant*)**

The project will not result in a permanent increase in noise from traffic because the employee population at the UC Davis Sacramento campus would not increase as a result of the project.

The proposed project would, however, result in a temporary increase in construction related traffic noise for the duration of the construction and demolition activities. All construction traffic will be prohibited from utilizing V Street and accordingly, the following discussion focuses on increased traffic along Stockton Boulevard. For the proposed construction and demolition activities of the proposed project, traffic would result from construction workers arriving at the project site, delivery of construction materials to the project site, and hauling of demolition debris from the project site. The estimated construction employee population will vary during each phase of the construction effort with a maximum of 50 employees expected during any particular day. The estimated truck traffic is expected to range from a low of two per day to a maximum of seven per hour (approximately 40 trucks per day) during demolition hauling operations. Based on the approximate rate that trucks can be loaded, the demolition hauling trucks are expected to depart the site at a rate of approximately one truck every 10

minutes. All construction truck traffic and most of the construction worker vehicles are expected to use Stockton Boulevard, X Street, and Colonial Way to travel to and from the project sites, with the remainder of travel occurring on the freeway.

Traffic data was developed for the 2010 LRDP EIR for study intersections in the campus vicinity. Four different scenarios were analyzed: existing no project peak hour traffic, existing with project peak hour traffic, cumulative no project traffic, and cumulative with project peak hour traffic. These traffic data were used in the 2010 LRDP EIR to determine whether there would be a substantial increase in traffic noise on streets serving the project site as a result of new traffic generated by the anticipated traffic levels caused by the entire amount of growth predicted for the Sacramento campus through the year 2025.

Traffic-related noise was modeled for street segments in the vicinity of noise-sensitive receptors. The environmental noise assessment evaluated traffic data for roadways near the northern, western, and southern perimeter of the campus where sensitive residential receptors were present. As shown in **Table 4.6-12, Noise Levels at Residences Near Sacramento Campus in dB(A)**, project-generated traffic would result in an increase of 3 dB(A) L_{dn} or less at all study segments near the campus perimeter. This result is also valid for on-campus roadways, such that project-generated traffic would result in an increase of 3 dB(A) L_{dn} or less adjacent to on-campus roadways. The study concluded that project-generated traffic for all of the growth expected through the year 2025 would cause an imperceptible change to the noise environment. This impact was considered in the 2010 LRDP EIR to be less than significant.

Table 4.6-12
Noise Levels (measured in dB(A) L_{dn}) in Residential Areas Near Sacramento Campus in dB(A)

Location	Existing Conditions			2025 Conditions		
	Without Project	With Project	Increase	Without Project	With Project	Increase
V Street near Emergency Room (LT-1)	66	67	1	67	67	0
V Street, east of Emergency Room (ST-1)	53	56	3	54 dB(A)	57 dB(A)	3
Broadway Street (ST-3)	68	69 dB(A)	1	70 dB(A)	70 dB(A)	0
Stockton Blvd. (LT-3 & ST-4)	63 dB(A)	64 dB(A)	1	64 dB(A)	65 dB(A)	1

Source: Illingworth & Rodkin 2010

The amount of traffic for the construction and demolition of the proposed project would be less than the traffic evaluated in the 2010 LRDP EIR traffic noise assessment and the amount of traffic noise is expected

to be less than the traffic noise projection contained in the 2010 LRDP EIR. The expected impact from the project's construction traffic would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Impact NOI-4: **The operation of mechanical equipment on the roof of the proposed building would not result in a substantial long-term increase in ambient noise levels. (Less than Significant)**

Although the proposed project would result in the removal of some exterior equipment that is currently on the rooftop of the North/South Wing of the Main Hospital, it would also add new operational sources of noise at the Sacramento campus in the form of mechanical and ventilation equipment on the proposed rooftop of the North Addition Office Building. Noise levels generated by this equipment would be attenuated by the distance between the equipment and the receptors on the north side of V Street. Furthermore, in accordance with **LRDP Mitigation Measure NOI-4** which has been incorporated and made part of the proposed project, the project would select mechanical equipment, screening, and noise attenuation features such as sound attenuators on fans, sound attenuator packages emergency generators, acoustical screen walls, and equipment enclosures to ensure that noise levels do not exceed the Noise Ordinance Standard limits (55 dB(A) daytime or 50 dB(A) nighttime) at noise-sensitive residences surrounding the campus. The potential impact related to stationary source noise would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Impact NOI-5: **The proposed project would not expose people to aircraft noise from airports or airstrips. (No Impact)**

The proposed project is within the vicinity of the emergency helicopter operations at the Main Hospital. Noise impacts from helicopter operations at the campus were evaluated in the UC Davis Sacramento 2010 LRDP EIR with specific background information beginning on page 4.10-10 of the LRDP EIR and specific noise impact analysis beginning on page 4.10-31 of the LRDP EIR. The proposed project would result in no changes to helicopter operations. No impact would occur.

Mitigation Measures: No project-level mitigation measures are required.

4.6.4.5 Cumulative Impacts and Mitigation Measures

Cumulative Impact NOI-1: The proposed project, in conjunction with other past, present and reasonably foreseeable future development, would not result in significant cumulative impacts related to noise. (*Less than Significant*)

Potential noise impacts from the development of the entire amount of growth on the Sacramento campus anticipated under the 2010 LRDP were evaluated in terms of (1) temporary increases in noise and vibration from construction activities, (2) permanent increases in noise that would stem from the increased traffic along roadways used by the Sacramento campus-related population, and (3) permanent increases in noise levels from daily activities including stationary equipment. That analysis represents the cumulative impact analysis for all potential projects at the Sacramento campus. Therefore, LRDP Impact NOI-3 evaluates the cumulative increase in traffic noise that would result from growth in traffic due to the 2010 LRDP implementation combined with regional traffic through 2025. The analysis concluded that the impact would be less than significant.

With respect to cumulative construction noise and vibration impacts, those would occur only if projects proposed by others were to be under construction the same time as the projects within the Sacramento campus and if these concurrent projects would be in close proximity of the same sensitive receptor. The nearby residential mixed use development at the northwest corner of T Street on Stockton Boulevard could result in increased construction traffic during the construction and demolition effort of the proposed project. The Stockton and T Street Mixed-Use project would include traffic from construction workers and delivery of materials. The Stockton and T Street Mixed-Use project is expected to be phased over a two year or longer time frame and is not expected to significantly increase traffic related noise on the same group of sensitive receptors as the proposed project due to the distance between the project sites (approximately 0.36 mile, or 1,925 feet). It should also be noted that due to the Stockton and T Street Mixed-Use project's immediate proximity to US 50, construction traffic from the project would most likely be routed to the north, further decreasing the potential for cumulative traffic noise impacts in conjunction with the proposed project. The cumulative impact would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

4.6.5 REFERENCES

City of Sacramento. Code Sec. 8.68.050.

Federal Railroad Administration. 1998. *High-Speed Transportation Noise and Vibration Impact Assessment*.

Governor's Office of Planning and Research. 1998. *General Plan Guidelines, Appendix A: Guidelines for the Preparation and Content of the Noise Element of the General Plan*.

U.S. Environmental Protection Agency. 1971. *Noise from Construction Equipment and Building Operations, Building Equipment, and Home Appliances*. December.

UC Davis. 2010. *UC Davis Sacramento Campus Long Range Development Environmental Impact Report*. November.

4.7 TRANSPORTATION AND TRAFFIC

4.7.1 INTRODUCTION

This section discusses the existing transportation system in the vicinity of the project site and analyzes the potential for implementation of the proposed Hospital Seismic Demolition and Office Replacement project (proposed project) to affect that system. Information and analysis presented in this section is based on preliminary project design studies, and review of the 2010 LRDP Environmental Impact Report (EIR) for the University of California, Davis Medical Center (Sacramento campus).

Caltrans submitted a comment related to impacts on state highways in response to the Notice of Preparation (NOP) issued for this EIR. All comment letters received in response to the NOP are provided in **Appendix 1.0** of this Draft EIR.

4.7.2 ENVIRONMENTAL SETTING

4.7.2.1 Study Area

The study area for this transportation and traffic section consists of the regional and local roadway network in the vicinity of the proposed project. Vehicular access to the proposed project sites, both during and after project demolition and construction activities would be from Stockton Boulevard and Colonial Way; no construction access or new operational access to the project sites would be provided via V Street. The existing streets and sidewalks would be also be used by pedestrians and bicyclists to access the sites.

4.7.2.2 Roadway System

The project sites, shown in **Figure 3.0-3, Project Site Locations**, are located in the Hospital Zone of the Sacramento campus. As described in **Section 4.13, Volume 1 of the 2010 LRDP EIR** from which this EIR is tiered, the campus is currently served by a fully developed roadway network which provides regional and local access. The roadways within the project vicinity are described below.

US 50 is a cross-country east-west highway that connects the Sacramento area to the Reno/Tahoe area. In the vicinity of the project, the highway is a limited-access freeway. An interchange at Stockton Boulevard provides regional access to the project site.

Stockton Boulevard is a north-south roadway that runs from Alhambra Boulevard to Power Inn Road and provides access to US 50. It is a four-lane divided road adjacent to the Sacramento campus. It contains a striped median serving as a two-way left turn lane along the campus.

T Street is an east-west roadway that extends from Alhambra Boulevard to Kroy Way, east of 65th Street. In the project vicinity, T Street provides one travel lane in each direction with a landscaped median between 40th Street and 44th Street (Sunset Park).

V Street is an east-west roadway that extends from Stockton Boulevard to 57th Street. In the project vicinity, V Street provides one travel lane in each direction and serves residences to the north and the campus to the south.

Colonial Way is an east-west roadway that extends from Stockton Boulevard to 42nd Street. In the project vicinity, Colonial Way provides one travel lane in each direction and provides internal vehicular circulation for the campus.

42nd Street is a north-south roadway that extends from S Street to Colonial Way. In the project vicinity, 42nd Street provides one travel lane in each direction.

4.7.2.3 Transit Facilities

Sacramento Regional Transit

The Sacramento Regional Transit District (RT) provides public transit service within the project area. RT's light rail Gold Line operates north of US 50 between downtown Sacramento and the City of Folsom. The closest stations to the Sacramento campus are located at 48th Street and 39th Street. These stations are within a half-mile walk to the project sites.

UC Davis Health System

The UC Davis Health System operates the Med-Transit shuttle service on the Sacramento campus as well as an intercampus shuttle system to UC Davis Main Campus for persons affiliated with the UC system. This includes faculty, staff, students, interns, volunteers, patients, and visitors. Two routes – internal and perimeter – provide service to and from buildings, parking lots, and the 39th Street light rail station. Generally, the system operates with headways between 5 to 7 minutes. On-demand service is also available at secondary shuttle stops. Morning express routes run between the Ambulatory Care Center, Main Hospital, and remote parking lots. The intercampus shuttle operates hourly departing from the east side of Lot 2.

4.7.2.4 Bicycle Facilities

The *Sacramento City/County Bikeway Master Plan* (Bikeway Plan) was originally adopted by the City of Sacramento in 1995, with the most recent update in March 2015. The Bikeway Plan identifies existing and planned bikeway facilities in the study area. The facilities are defined as follows:

- Class I Bikeway – bicycle paths in a completely separated right-of-way for the exclusive use of bicyclists and pedestrians
- Class II Bikeway – bicycle lanes striped on a street or highway
- Class III Bikeway – bicycle routes are on-street shared facilities

There are no Class I facilities in the project vicinity. Class II bicycle lanes exist on X Street, 48th Street south of X Street, 49th Street, 50th Street, and T Street. Class III bicycle routes are indicated on 48th Street north of V Street, 51st Street north of V Street, V Street between 48th Street and 51st Street, and 2nd Avenue west of 2nd Avenue.

4.7.2.5 Pedestrian Facilities

In general, sidewalks measuring 4 to 5 feet in width are present along most of the roadways in the project vicinity. About half the sidewalks on the Sacramento campus are separated from vehicle traffic by a landscape strip. These detached sidewalks are also present along Stockton Boulevard, V Street, and throughout the Elmhurst neighborhood to the north of the project sites. Most of these locations have trees along the sidewalks, which are commonly considered attributes of a pedestrian-friendly environment.

4.7.2.6 Sacramento Campus TDM Program

The Sacramento campus has a robust TDM program that comprises the use of carpool, vanpool, transit, Amtrak, bicycling and walking to and from the campus. The program is offered to all employees, including faculty and staff. As of 2008–09, approximately 12 percent of the Sacramento campus's daytime staff used alternative transportation to travel to and from the campus, with 4 percent arriving in van- and carpools, 4 percent by transit, 3 percent on bicycle, and 1 percent on foot. Students are also eligible for the TDM program. Population estimates indicate that 12 percent of the students travel to the campus using alternative transportation. Less than 1 percent of the patients and visitors arrive at the campus using alternative modes.

4.7.3 REGULATORY CONSIDERATIONS

4.7.3.1 California Department of Transportation

The California Department of Transportation (Caltrans) provides for the mobility of people, goods, services, and information. Its mission is to work in partnership with others to provide the people of California with a safe, efficient, and effective intermodal transportation system by planning, developing, maintaining, and managing the interregional transportation system and assisting and guiding delivery of local and regional transportation services. Caltrans provides administrative support for transportation programming decisions made by the California Transportation Commission and Caltrans for state funding programs. The State Transportation Improvement Program (STIP) is a multi-year capital improvement program that sets priorities and funds transportation projects envisioned in long-range transportation plans.

US 50 Corridor System Management Plan

The US 50 Corridor System Management Plan (May 2009) identifies “Concept LOS” and “Concept Facility” to reflect the minimum level or quality of operations acceptable for each route segment within the 20-year planning period and the highway facility needed in the next 20 years to maintain the Concept LOS. Caltrans’ Concept LOS for the freeway segment in the project vicinity is LOS F.

4.7.3.2 Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the six-county Sacramento Region. Its members include the counties of Sacramento, El Dorado, Placer, Sutter, Yolo, and Yuba as well as 22 cities. SACOG provides transportation planning and funding for the region, and serves as a forum for the study and resolution of regional issues. In addition to preparing the region’s long-range transportation plan, SACOG assists in planning for transit, bicycle networks, clean air, and airport land uses. SACOG also maintains a regional model that is used for developing long-range travel forecasts (City of Sacramento 2009).

2035 Metropolitan Transportation Plan/Sustainable Communities Strategy

The Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) for 2035 (SACOG 2012) is a federally mandated long-range fiscally constrained transportation plan for the six-county area. Most of this area is designated a federal non-attainment area for ozone, indicating that the transportation system is required to meet stringent air quality emissions budgets to reduce pollutant levels that contribute to ozone formation. To receive federal funding, transportation projects nominated by cities,

counties, and agencies must be consistent with the MTP/SCS. Consistency is measured based on whether the project was contained in the plan and its associated computer modeling of transportation and air quality impacts. In addition, any regionally significant transportation project planned for a city or county must be included in the MTP because of its potential effect on travel demand and air pollution.

4.7.3.3 Sacramento Regional Transit

The Sacramento Regional Transit District (RT) provides public transit service within the project area. RT operates approximately 100 bus routes and 40 miles of light rail covering a 418-square-mile service area.

TransitAction Plan

Sacramento Regional Transit District's "TransitAction Plan" (August 2009) is the revised long-term plan for transit service over the next 25 years, with a horizon year of 2035. The TransitAction Plan places significant emphasis on improved transit service throughout the region through a combination of infrastructure investments and service modifications. The Plan defines three planning scenarios and presents a preferred scenario for future implementation.

4.7.3.4 City of Sacramento

The City of Sacramento provides for the mobility of people and goods within the City of Sacramento. Nearly all the study intersections are within the City of Sacramento jurisdiction.

City of Sacramento 2035 General Plan

The City of Sacramento 2035 General Plan, adopted in August 2014, was shaped over a four-year period by an extensive public outreach process. The guiding vision of the General Plan is that "Sacramento will be the most livable City in America." The General Plan contains goals and policies that determine acceptable operations for intersections in the city.

Sacramento City/County Bikeway Master Plan

The Sacramento City/County Bikeway Master Plan adopted by the City of Sacramento in 1995 identifies existing and planned bikeway facilities in the study area. The plan provides recommendations for implementing a comprehensive and coordinated bikeway network for making travel by bicycle a viable transportation option in the City and County of Sacramento. The major goal of the plan is to "develop and maintain a coordinated approach by City/County and other agencies to implement the plan as funding becomes available or as development occurs."

City of Sacramento Pedestrian Master Plan (2006)

The City of Sacramento Pedestrian Master Plan (2006) provides a comprehensive vision for improving pedestrian conditions. The purpose is to make Sacramento a model pedestrian-friendly city – the “Walking Capital.” The goals of the plan fall into the following three categories.

- Create a walkable pedestrian environment throughout the city.
- Improve awareness of the pedestrian mode through education.
- Increase pedestrian safety (City of Sacramento 2009).

4.7.3.5 UC Davis Sacramento Campus 2010 Long Range Development Plan

The 2010 LRDP is intended to provide a general land use plan that will allow the UC Davis Health System to achieve its educational, clinical, research, and engagement goals. The plan provides for the following:

- Hospital renovation and growth (additional 1,172,000 square feet)
- Expansion of ambulatory care services (additional 780,000 square feet)
- Growth in education and research facilities (additional 1,140,000 square feet)
- Increase in support facilities (additional 87,000 square feet)

The Campus is expected to grow to approximately 12,760 faculty, students, daytime staff, interns, residents, and fellows by 2025. Patient and visitor population is projected to grow to 6,956 persons by 2025.

The 2010 LRDP identifies the following transportation and circulation changes:

- Consolidation and removal of some existing surface lot parking facilities
- Construction of five additional parking structures on Campus to provide approximately 3,500 additional parking spaces
- Closure of 45th Street south of V Street to general vehicle traffic
- Closure of 48th Street south of V Street to general vehicle traffic

4.7.4 ENVIRONMENTAL IMPACTS

4.7.4.1 Significance Criteria

The impacts from the implementation of the proposed project related to transportation and traffic would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines* and the UC CEQA Handbook:

- Exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designated in a general plan policy, ordinance, etc.), taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Although the LRDP EIR evaluated the impacts of campus growth and development under the 2010 LRDP on parking capacity, since then Appendix G has been revised and inadequate parking capacity is no longer considered an environmental impact. Therefore, the issue is not evaluated in the impact analysis below.

4.7.4.2 CEQA Checklist Items Adequately Analyzed at the 2010 LRDP Level or Not Applicable to the Project

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)

The analysis in Section 4.13 of the 2010 LRDP EIR found that the campus development under the 2010 LRDP would not involve construction of new or changed roadways that would contain design features

that could be hazardous. Under the proposed project, the closure of the southern entrance to Parking Structure 1 during demolition of the Ramp Tower and the Surgical Center of the North/South Wing would be temporary (lasting approximately two to three weeks) and would not result in any permanent changes to the area roadways. In addition, to minimize interruption to the Sacramento campus and surrounding neighborhoods, demolition traffic would be routed one way through the construction zone, with the traffic entering the area via the southern Stockton Boulevard Parking Structure 1 entrance, proceeding north through the demolition area, turning left at Colonial Way and finally exiting the campus at the intersection of Colonial Way and Stockton Boulevard. No demolition/construction traffic would be routed via V Street. California Department of Transportation (Caltrans) certified flag persons would be deployed along all traffic routes near the project sites who would direct traffic at the north construction gate, Stockton Boulevard demolition entrance, and the intersection of Stockton Boulevard and Colonial Way for the duration of the project. These flag persons will work also as security to keep the general public and staff out of the demolition sites. Thus, impacts related to roadway design hazards and/or incompatible uses would be less than significant. No further analysis is required.

The analysis in Section 4.13 of the 2010 LRDP EIR found that implementation of the 2010 LRDP would not substantially increase demand for transit service nor result in conflicts with any existing plans for transit. The proposed project is not expected to disrupt or discourage transit use. The proposed project does not include any improvements that could interfere with transit plans for the area. Therefore, the proposed project would result in a less than significant impact to the area transit system. No further analysis is required.

As discussed in Section 4.13, implementation of the 2010 LRDP would increase the volume of pedestrians and bicyclists in the surrounding area but would not adversely affect existing or planned bicycle and pedestrian facilities, result in reduced pedestrian or bicyclist safety, or conflict with existing plans for bicycle and pedestrian facilities. The proposed project does not involve improvements that would adversely affect any bicycle facilities on or off the campus site. Further, implementation of the proposed project would not interfere with the implementation of the Sacramento City/County Bikeway Master Plan. Under the proposed project, in order to ensure safety, certain pedestrian and bikeways may be subject to temporary closure (refer to **Section 3.5, Project Description, Project Elements, Construction and Demolition Logistics**), but the proposed project would not result in any permanent changes to the pedestrian and bikeway circulation system in the area. The proposed project does not include any plans for improvements that would obstruct pedestrian facilities or interfere with implementation of the City of Sacramento Pedestrian Master Plan. Therefore, the proposed project would result in a less than significant impact to the bicycle and pedestrian systems. No further analysis is required.

4.7.4.3 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project and circulated with the NOP concluded that further analysis of the following issue was not required in the EIR.

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks
- Result in inadequate emergency access

The proposed project would result in no change to air traffic patterns and no increase in air traffic levels. Accordingly, the project would result in no change to safety risks related to air traffic. No impact would occur. No further analysis is needed.

During project construction and demolition, temporary construction fencing would be installed such that emergency access to all hospital facilities is maintained (refer to **Section 3.5, Project Description, Project Elements, Construction and Demolition Logistics**). One of the primary objectives of the Main Hospital is to provide emergency services and the routing needs for emergency access will undergo extensive scrutiny during the project design process to ensure that each phase of the project maintains adequate access. No impact would occur. No further analysis is needed.

4.7.4.4 2010 LRDP EIR Mitigation Measures Included in the Proposed Project

Table 4.7-1, 2010 LRDP EIR Mitigation Measures, presents the mitigation measures in the 2010 LRDP EIR that are applicable to the proposed project. Since these previously adopted mitigation measures are already being carried out as part of implementation of the 2010 LRDP, they are included in and are a part of the proposed project and will not be readopted. Implementation of these mitigation measures is assumed as part of the project impact analysis.

**Table 4.7-1
2010 LRDP EIR Mitigation Measures**

Mitigation Measure	Description
LRDP MM TRA-1a	Travel Demand Management. To reduce on- and off-Campus vehicle trips and resulting impacts, the University will enhance its Transportation Demand Management (TDM) program. TDM strategies will include measures to increase transit and shuttle use, encourage alternative transportation modes including bicycle transportation, implement parking policies that reduce demand, and other mechanisms that reduce vehicle trips to and from the Campus. The University will work to achieve at least a 3% improvement in the mode split of daytime staff from the current 88% SOV/12% other modes. Trip reduction targets for students will be higher with approximately 15 to 20% traveling by other modes. The University shall monitor the performance of Campus TDM strategies through annual surveys.
LRDP MM TRA-1b	Transit Enhancement. To enhance transit systems serving the Campus, the University will work cooperatively with Sacramento Regional Transit, and other local agencies to coordinate service routes with existing and proposed shuttle and transit programs.
LRDP MM TRA-1c	Sustainability and Monitoring. The University shall review individual projects proposed under the 2010 LRDP for consistency with UC sustainable transportation policy and UC Davis Sacramento campus TDM strategies to ensure that bicycle and pedestrian improvements, alternative fuel infrastructure, transit stops, and other project features that promote alternative transportation are incorporated into each project to the extent feasible.
LRDP MM TRA-1d	Campus Traffic Impact Monitoring. The University will conduct traffic counts at key gateway locations on the Campus every five years to determine the amount of traffic generated by the Campus.

Source: UC Davis Sacramento Campus, 2010 LRDP EIR, Section 4.13, Transportation and Traffic.

4.7.4.5 Methodology

The analysis presented in this section is based on preliminary project design studies, review of the 2010 LRDP, and the 2010 LRDP EIR for the Sacramento campus.

4.7.4.6 Project Impacts and Mitigation Measures

Impact TRA-1: Implementation of the proposed project could contribute traffic to sub-standard intersection operations. (*Potentially Significant; Less than Significant with Mitigation*)

Construction

As noted above, other than the temporary closure of the southern entrance to Parking Structure 1 during demolition of the Ramp Tower and the Surgical Center of the North/South Wing, there would be no road closures requiring extensive rerouting of general traffic during project construction. In addition, to minimize interruption to the Sacramento campus and surrounding neighborhoods, demolition traffic

would be routed one way through the construction zone, with the traffic by entering the area via the southern Stockton Boulevard Parking Structure 1 entrance, proceeding north through the demolition area, turning left at Colonial Way and finally exiting the campus at the intersection of Colonial Way and Stockton Boulevard. No demolition/construction traffic would be routed via V Street. Flag persons would be deployed along all traffic routes near the project sites who direct traffic at key locations for the duration of the project. Therefore, disruption of general traffic on adjacent city streets would be minimized. The proposed project would, however, add a substantial amount of truck traffic to the city streets, especially during the demolition of the North/South Wing. As shown in **Table 4.7-2, Proposed Project Construction Sequencing and Traffic Estimates**, depending on the activities that are underway, the proposed project would generate varying numbers of daily truck trips during construction of the North Addition Office Building, demolition of the Housestaff Building and the North/South Wing, construction of the replacement façade on the Main Hospital, and site redevelopment for the two new plaza areas, with the highest number of daily truck trips associated with the demolition of the North/South Wing. The highest number of truck trips would occur over a period of 10 to 12 weeks. In addition, daily vehicle trips would be added to the city streets by construction workers traveling to and from the project sites. In summary, construction traffic associated with the proposed project could result in congestion and reduced street capacity in the project vicinity.

To address this potentially significant impact, a project specific mitigation measure (**Mitigation Measure TRA-1**) is proposed that requires the Campus to develop and implement a Construction Traffic Management Plan (CTMP) to manage the movement of construction vehicles in a safe and effective manner. The CTMP would include information such as the number and size of trucks per day, times of the day when truck movement is allowed, truck circulation patterns, location of staging areas, location/amount of construction employee parking, and the proposed use of traffic control/partial street closures on public streets. The CTMP would also include both vehicular and pedestrian way-finding signage, and route Main Hospital delivery traffic from Stockton Boulevard, east on X Street, then north on 45th Street, through the Campus and into the dock at the rear or north of the facility (refer to **Figure 3.0-18**). The overall goal of the CTMP would be to minimize traffic impacts to Campus and public streets and maintain a high level of safety for all vehicles and pedestrians.

**Table 4.7-2
Proposed Project Construction Sequencing and Traffic Estimates**

Building	Sequence Description	Estimated Number of Weeks	Approximate Daily Truck Trips (entering and leaving)
North Addition Office Building			
Site Prep and Utilities	Site clearing and utility prep	20	4
Excavation and Foundation	Foundation excavation, steel placement, concrete pouring	12	4
Vertical Construction	Steel and floor construction, building skin, finishing	64	6
Housestaff Building			
Abatement and Utility Disconnect	Equipment/furnishing removal Abatement with utility disconnection	8	4
Demolition	Building demolition and hauling	2	12
Site Stabilization	Provide gravel for contractor staging	1	6
Plaza Reconstruction ¹	Landscape and concrete work	8	3
North/South Wing			
Sequence 1	Interior Demolition and Abatement (Soft Demolition)	30	2
Sequence 2	Structural Demo of Ramp Tower and Surgical Center	2	40
Sequence 3	Structural Demo of Southern end of the Wing	2	38
Sequence 4	Structural Demo of East Tower connector and 1928 South Annex	2	38
Sequence 5	Structural Demo of Central portion of the Wing	2	38
Sequence 6	Structural Demo of Northern portion of the Wing	2	38
Sequence 7	Structural Demo of 1928 North Annex	2	28
Façade Construction	Construction work	26	15
Plaza Reconstruction	Landscape and concrete work	8	3

¹ – It is anticipated that plaza reconstruction at the Housestaff Building and the North/South Wing demolition sites would take place concurrently.

Source: UC Davis Environmental Stewardship and Sustainability Department, August 2015.

Note: Truck trips per day represent the total entering and leaving trips for each distinct phase. For example, the Sequence 2 demolition would occur over a two week period (10 working days) and is expected to include a total of 200 truckloads. This would average 20 loads departing on an average day and a total of 40 truck trips (20 arrivals of an empty truck and 20 departures with a full truck) for a total of 40 loads in Sequence 2

Operations

The transportation and traffic impacts of all campus development under the 2010 LRDP, including the proposed project, are adequately addressed in Section 4.13 of the 2010 LRDP EIR. As noted in **Section 3.0, Project Description**, the proposed project involves the relocation of existing programs and the North Addition Office Building provides only a small amount of building space for growth of the relocated programs. As a result, the population of the campus is not expected to increase substantially as a result of project implementation. Consequently, the number of daily vehicle trips to the campus is not expected to increase substantially as a result of the proposed project. Furthermore, the Campus will continue to implement **LRDP Mitigation Measure TRA-1** which is included in and a part of the proposed project. **LRDP Mitigation Measure TRA-1** is a multi-component program to monitor trip generation, reduce peak-hour trips to the extent feasible, and/or participate in roadway improvements to mitigate off-site impacts at the intersections affected by the proposed project. The operation of the North Addition Office Building would result in a less than significant impact on traffic conditions.

Mitigation Measures:

- TRA-1:** The University shall require the prime contractor to prepare and implement a Construction Traffic Management Plan that will include, but will not necessarily be limited to, the following elements:
- Identify proposed truck routes to be used; no construction traffic is to be permitted on V Street.
 - Specify construction hours, including limits on the number of truck trips during the a.m. and p.m. peak traffic periods (7:00 – 9:00 AM and 4:00 – 6:00 PM), if conditions demonstrate the need.
 - Include a parking management plan for ensuring that construction worker parking results in minimal disruption to surrounding uses.
 - Include a public information and signage plan to inform patients, visitors and staff of the planned construction activities, roadway changes/closures, and parking changes.
 - Store construction materials only in designated areas that minimize impacts to nearby roadways.

- Use of California Department of Transportation (Caltrans) certified flag persons for any temporary lane closures to minimize impacts to traffic flow, and to ensure safe access into and out of the project site(s).
- Develop circulation and detour plans to minimize impacts to local street impacts from construction activity on nearby major arterials. This may include the use of signing and flagging to guide vehicles through and/or around the construction zone.
- Limit the number of lane closures during peak hours to the extent possible.
- Install traffic control devices as specified in the California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones.
- Develop and implement access plans for potentially impacted local services such as police and fire stations, transit stations, hospitals, schools and parks. The access plans should be developed with the facility owner or administrator. To minimize disruption of emergency vehicle access, affected jurisdictions should be asked to identify detours for emergency vehicles, which will then be posted by the contractor.
- Coordinate with local transit agencies for temporary relocation of routes or bus stops in works zones, as necessary.
- Include coordination with other projects under construction in the immediate vicinity, so an integrated approach to construction-related traffic can be developed.

Significance after Mitigation: Implementation of this mitigation measure would reduce the project's construction traffic impact to a less than significant level.

4.7.4.7 Cumulative Impacts and Mitigation Measures

Cumulative Impact TRA-1: Implementation of the proposed project, in conjunction with other reasonably foreseeable future projects, would not result in significant traffic impacts. (*Less than Significant*)

Construction

To evaluate the potential for cumulative temporary construction and demolition impacts, the City of Sacramento was contacted to obtain a list of approved and pending projects that potentially could be under construction at the same time as the proposed project and in its vicinity such that potential short-term cumulative impacts could occur. The City informed the Campus that there is one approved residential mixed-use project at the intersection of Stockton Boulevard and T Street, about three city blocks to the north of the Sacramento campus. The Stockton and T Street Mixed-Use project would remove the existing 120,000 sf vacant office building (formerly AT&T) and associated parking lot and subdivide the property for construction of a mixed-use residential and commercial development. The mixed-use project includes a 214-unit, five-story, multi-family housing complex with ground floor commercial and parking garage on the corner of Stockton Boulevard and T Street. In addition, the project includes construction of approximately 24 single-family homes between S Street and US 50. Although the construction timeline of that project is not known at this time, however, because the project has been approved, its construction could commence anytime and overlap with the construction and demolition activities of the proposed project on the Sacramento campus. Construction traffic associated with both projects would add traffic to Stockton Boulevard up to the two east-and westbound ramps of US 50. There is existing congestion at the westbound on-ramp in the PM peak hour, and both projects could potentially contribute traffic at this location. However, as stated in the Initial Study/Mitigated Negative Declaration prepared for the mixed-use project by the City of Sacramento, the proposed project would implement MTP/SCS EIR Mitigation Measure TRN-3, and SCEA IS Mitigation Measure XI-2 which would reduce the impact of the project's construction traffic to a less than significant level (City of Sacramento 2015). Similarly, the proposed project would implement **Mitigation Measure TRA-1** to minimize any construction-phase impacts. This measure also includes coordination between the two projects to minimize traffic congestion. Therefore the cumulative construction traffic impact would be less than significant.

Operations

The cumulative transportation and traffic impacts of all growth under the 2010 LRDP, including the proposed project, are adequately addressed in Section 4.13 of the 2010 LRDP EIR. No further evaluation of cumulative traffic impacts is required.

Mitigation Measure: No project level mitigation measures are required.

4.7.5 REFERENCES

City of Sacramento. 2015. *Draft SCEA Initial Study, Stockton and T Street (P14-042)*. March

University of California, Davis Sacramento Campus. 2009. *2010 Long Range Development Plan*. November.

University of California, Davis Sacramento Campus. 2010. *2010 Long Range Development Plan Environmental Impact Report*. July.

4.8 UTILITIES AND SERVICE SYSTEMS, INCLUDING ENERGY

4.8.1 INTRODUCTION

This section describes the existing utilities and service systems that serve the project site. It determines whether the implementation of the Hospital Seismic Demolition and Office Replacement project (project or proposed project) would result in the need for new or improved utilities, the construction of which could produce potential environmental impacts. It also evaluates the potential for the proposed project to result in significant energy impacts. As described in Section 4.14, Volume 1 of the 2010 Long Range Development Plan (LDRP) EIR from which this EIR is tiered, the University of California Davis Medical Center (Sacramento campus) is currently served by the full range of utilities and a well-developed utility infrastructure, augmented by water, wastewater, natural gas, electricity, and some telecommunications services from outside providers.

No public or agency comments related to utilities, service systems, and energy were received in response to the Notice of Preparation (NOP) issued for this EIR. All comment letters received in response to the NOP are provided in **Appendix 1.0** of this Draft EIR.

4.8.2 ENVIRONMENTAL SETTING

4.8.2.1 Project Location

The Sacramento campus is located in the City of Sacramento, approximately 2.5 miles southeast of downtown Sacramento, and 17 miles east of the UC Davis main campus. The Sacramento campus is bound by V Street on the north, Stockton Boulevard to the west, Broadway to the south, and a residential neighborhood to the east. The campus is organized into four general land use zones or functional areas, consisting of (1) Hospital, (2) Ambulatory Care, (3) Education and Research, and (4) Support Services zones (see **Figure 3.0-2, Existing UC Davis Sacramento Campus**).

The proposed project is located within the Hospital Zone and is composed of three components: construction and occupancy of the North Addition Office Building, demolition of the North/South Wing, and the demolition of the Housestaff Building. The North Addition Office Building would be constructed north of the Main Hospital on the site currently occupied by an approximately 30,000 square foot single-story temporary building used as the Children's Surgery Center and the Trauma Nursing Unit that will be demolished under a separate project in late 2015. The Housestaff Building is a 20,000 gross-square foot

(GSF)¹ building, located adjacent to Colonial Way, on an approximately 10,000 sf site. The North/South Wing of the Main Hospital is a six-story building that is located immediately adjacent to Stockton Boulevard to the south, and Colonial Way to the north and is approximately 200 feet from the northern edge of the campus, on an approximately 50,000 sf site (see **Figure 3.0-3, Project Site Locations**).

4.8.2.2 Utilities and Service Systems

Water Supply

Potable water is supplied to the Sacramento campus by connection to the City of Sacramento domestic water system. This water is used for domestic, fire protection, Central Energy Plant (Central Plant), and partially for irrigation uses.² A City of Sacramento aboveground water tank is present on the campus on the south side of V Street. The Campus owns and operates two wells that supply irrigation water to all campus grounds (UC Davis 2010).

Wastewater

Wastewater from the campus is conveyed to the City of Sacramento combined sewer and storm water facilities. It is treated at the Sacramento Regional Wastewater Treatment Plant (SRWTP), which is owned and operated by the Sacramento Regional County Sanitation District (SRCSD). The Central Valley Regional Water Quality Control Board (CVRWQCB) regulates the quality and quantity of effluent discharged from the SRWTP (UC Davis 2010).

Storm water

Storm water from half of the campus area discharges into the City's combined sewer system, which handles both storm water runoff and domestic sewer discharge. Storm water from the other half of the campus flows via the city storm drains to the American River. A City-owned storm water detention basin designed for 10-year flows is located in the northeastern portion of the campus (UC Davis 2010).

Municipal Solid Waste

The UC Davis Department of Facilities Operations and Maintenance is responsible for the collection and disposal of solid waste on the campus. Solid waste collected on campus is disposed of in a regional landfill with adequate permitted capacity to serve anticipated regional needs.

¹ GSF = Gross Square Feet - The sum of all areas on all floors of a building included within the outside faces of its exterior walls, including all vertical penetration areas, for circulation and shaft areas that connect one floor to another.

² To comply with State Executive Order B-29-15 outdoor irrigation of ornamental landscapes or turf with potable water from the campus domestic water system is limited to two days per week. `

The campus is considered a Large Quantity Generator (LQG) of hazardous waste and is subject to state and federal regulations affecting these facilities. The campus generates and disposes of corrosive, reactive, ignitable, metallic (chromium, lead, mercury, and silver) and other wastes on the Resource Conservation and Recovery Act (RCRA) list (UC Davis 2010).

Electricity and Natural Gas

Pacific Gas & Electric Company (PG&E) provides natural gas to the campus from gas distribution mains on V Street, Stockton Boulevard, Broadway, 45th Street, 48th Street, Y Street, and 2nd Avenue. A 6-inch transmission main extension was built in 1997 from an existing transmission main located in 24th and T Street to 49th and 2nd Avenue to provide transmission level service to the campus. This system serves the (Central Plant. The Central Plant on the campus provides normal and emergency electrical power, and is designed to accommodate growth in utility demand on the campus (UC Davis 2010).

Campus Chilled Water and Steam Systems

The Central Plant provides chilled and hot water for cooling and heating, and process steam to most campus buildings. The Central Plant includes a chilled water system composed of multiple absorption and centrifugal chillers, with an operating capacity of 10,500 tons of water. The Central Plant total steam production capability from the combined cycle turbine power plant and installed boiler capacity is 160,800 pounds per hour (lbs/hr). Due to existing air permit requirements, only two of the four boilers are allowed to operate when the gas turbine is operating at full load. This reduces the allowable steam production capacity to 122,400 lbs/hr (UC Davis 2010).

Telecommunications

The Campus owns and operates its own telecommunications infrastructure.

4.8.3 REGULATORY SETTING

4.8.3.1 State Regulations

SB 610 and SB 221 – Water Supply Assessments

In 2001, the California Legislature passed Senate Bill 610 (Water Code Section 10910 et seq.) and Senate Bill 221 (Water Code Section 66473.7) to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 and SB 221 were companion measures, which sought to promote more collaborative planning between local water

suppliers and cities and counties. SB 610 and SB 221 are not applicable to University of California projects.

Assembly Bill 939

In 1989, Assembly Bill (AB 939) established the current organization, structure and mission of the California Integrated Waste Management Board. The purpose was to direct attention to the increasing waste stream and decreasing landfill capacity, and to mandate a reduction of waste being disposed. Jurisdictions were required by AB 939 to meet diversion goals of 25 percent by 1995 and 50 percent by the year 2000. Each City and County was required to submit a plan (Source Reduction and Recycling Element) which described how they would meet the waste reduction mandates. The University of California is not subject to this Act. However, sustainability is a central element of the 2010 LRDP and the UC Sustainable Practices Policy sets waste diversion goals of 75 percent by June 2012 and zero waste by 2020.

California Universal Waste Law

This legislation went into effect in February 2006. Universal wastes are a wide variety of hazardous wastes such as batteries, fluorescent tubes, and some electronic devices, that contain mercury, lead, cadmium, copper or other substances hazardous to human and environmental health. Universal waste may not be discarded in solid waste landfills, but instead are recyclable and (to encourage recycling and recovery of valuable metals) can be managed under less stringent requirements than those that apply to other hazardous wastes.

Government Code 54999

Government Code 54999 provides for the payment of fees in certain specific enumerated situations for capital improvements to utilities actually serving the University. A capital facilities fee that is imposed must be nondiscriminatory and the amount must not exceed the amount actually necessary to provide capital facilities to the University.

Executive Order B-29-15

The Campus must comply with State Executive Order B-29-15 which requires potable water demand to be reduced by 25 percent. To ensure strict compliance with the regulations, the outdoor irrigation of ornamental landscapes or turf with potable water is limited to two days per week. Additionally, these systems must be operated to prevent runoff and halt irrigating for 48 hours following measurable rainfall.³

³ UC Davis Utilities Department, Water Consumption Memorandum, May 31, 2015.

University of California Sustainable Practices Policy

The University of California Sustainable Practices Policy was adopted by The Regents in 2006 and most recently revised and issued in June 2015. The policy was developed to standardize campus practices and is a system-wide commitment to minimize the University of California's impact on the environment and reduce the University's dependence on non-renewable energy sources. The University of California Policy on Sustainable Practices establishes goals in nine areas of sustainable practices:

- Green Building,
- Clean Energy,
- Climate Change and Protection,
- Sustainable Transportation,
- Sustainable Operations,
- Waste Reduction and Recycling,
- Sustainable Purchasing,
- Sustainable Foodservice, and
- Sustainable Water Systems.

The policy guidelines that address these topics recommend that University operations:

- Incorporate the principles of energy efficiency and sustainability in all capital projects, operations and maintenance within budgetary constraints and programmatic requirements.
- Minimize the use of non-renewable energy sources on behalf of UC's built environment by creating a portfolio approach to energy use, including use of local renewable energy and purchase of green power from the grid as well as conservation measures that reduce energy consumption.
- Incorporate alternative means of transportation to/from and within the campus to improve the quality of life on campus and in the surrounding community. The campuses will continue their strong commitment to provide affordable on-campus housing, in order to reduce the volume of commutes to and from campus. These housing goals are detailed in the campuses' LRDPs.
 - Track, report and minimize GHG emissions on behalf of UC operations.
 - Minimize the amount of University-generated waste sent to landfill.
 - Utilize the University's purchasing power to meet its sustainability objectives.

The University of California has signed the American College and University Presidents Climate Commitment. Each signatory commits to completing an inventory of GHG emissions within one year, and to developing, within two years, an institutional plan to achieve climate neutrality as soon as possible. The commitment also includes specific interim actions, including requiring that new campus construction be built to at least the US Green Building Council's LEED Silver standard or equivalent; purchasing Energy Star appliances; offsetting greenhouse gas emissions generated by institutional air travel; encouraging and providing access to public transportation; purchasing or producing at least 15 percent of the institution's electricity consumption from renewable sources; supporting climate and sustainability shareholder proposals at companies where the institution's endowment is invested; and adopting measures to reduce waste.

4.8.4 IMPACTS AND MITIGATION MEASURES

4.8.4.1 Significance Criteria

The significance criteria listed below are derived from Appendix G and Appendix F of the *State CEQA Guidelines* and the UC CEQA Handbook. For the purpose of this EIR, utilities, service systems, and energy impacts would be significant if implementation of the proposed project would:

- exceed the Regional Water Quality Control Board's wastewater treatment requirements;
- require or result in the construction or expansion of water or wastewater treatment facilities, which would cause significant environmental effects;
- require or result in the construction or expansion of storm water drainage facilities, which could cause significant environmental effects;
- result in the need for new or expanded water supply entitlements due to insufficient water supplies available to serve the project from existing entitlements and resources;
- exceed available wastewater treatment capacity;
- be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs;
- fail to comply with applicable federal, state, and local statutes and regulations related to solid waste.
- require or result in the construction or expansion of electrical or natural gas facilities which would cause significant environmental impacts;
- result in wasteful, inefficient, and unnecessary use of energy; or
- place a significant demand on regional energy supply or require provision of substantial additional capacity.

4.8.4.2 Methodology

Project impacts to utilities, service systems and energy are based on a qualitative comparison of the existing and projected demand for utilities and the resulting need, if any, for new, expanded, or modified facilities to meet the increased demand. As determined in Section 4.14, Utilities and Service Systems of the 2010 LDRP EIR, from which this EIR is tiered, impacts to the existing utilities and service systems that serve the campus would be less than significant upon buildout of the LDRP. Further, the staffing levels on the campus are not expected to increase due to the proposed project. As the proposed project would be constructed to meet all UC sustainability goals and would seek a UC equivalent LEED® Gold Certification or better, these project features were taken into consideration when determining the proposed project's demand for utilities and energy.

4.8.4.3 2010 LRDP EIR Mitigation Measures Included in the Proposed Project

Analysis in the 2010 LRDP EIR concluded that all potential impacts to Utilities and Service Systems as a result of implementation of the 2010 LRDP would be less than significant and no mitigation measures were necessary.

4.8.4.4 Project Impacts and Mitigation Measures

Impact UTIL-1: Implementation of the proposed project would not exceed wastewater treatment requirements of the Central Valley Regional Water Quality Control Board. (*Less than Significant*)

Development of the proposed project would not result in an increase in staffing levels and would reduce building space on the campus by approximately 125,000 GSF. In addition, the proposed project would be constructed to meet all UC sustainability goals, applicable goals included in the Campus CAP,⁴ and would seek a UC equivalent LEED® Gold Certification or better. Projects that qualify for LEED® Gold certification are required to reduce indoor aggregate water consumption by 20 percent from the calculated baseline water consumption conditions.⁵⁶ To meet the 20 percent reduction, the proposed

⁴ The Climate Action Plan lists strategies to minimize campus water consumption, including water-efficient landscaping, fixture retrofits, efficient fixtures in new buildings, education, and energy conservation initiatives that would minimize water use

⁵ The US Green Building Council (USGBC) has established baseline conditions (based on volumes and flow rates) for commercial fittings, fixtures and appliances. USGBC website Indoor Water Use Reduction, Table 1, <http://www.usgbc.org/node/1734960?return=/credits/new-construction/v4/water-efficiency>, accessed August 10, 2015

⁶ USGBC LEED BD+C New Construction, Indoor Water Use Required Reduction, <http://www.usgbc.org/node/1734960?return=/credits/new-construction/v4/water-efficiency>, accessed August 10, 2015

project would be required to install low-flush toilets and water efficient faucets and showerheads. The proposed project's reduction in indoor water consumption would also result in a reduction in the project's wastewater generation. Therefore, operation of the proposed project would not increase the volume of wastewater conveyed to the City of Sacramento combined sewer and storm water facilities, but instead would reduce the volume of wastewater, compared to existing conditions. Wastewater generated during operation of the proposed project would be treated at the SRWTP. The CVRWQCB would regulate the quality and quantity of effluent discharged from the SRWTP. The proposed project would comply with discharge requirements of the SRWTP. Further, operational activities associated with the proposed project would not contribute pollutants in wastewater that is discharged into the sanitary sewer system that could cause a violation of waste discharge requirements of the SRWTP. The impact would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Impact UTIL-2: **The project-related demand for water and wastewater conveyance facilities would not require the expansion of pipes and structures. (*Less than Significant*)**

Development of the proposed project would not result in an increase in staffing levels and would reduce building space on the campus by approximately 125,000 GSF. As discussed above, the proposed project includes the construction of the approximately 130,000 GSF North Addition Office Building. The new building would be constructed on the site currently occupied by an approximately 30,000 square foot single-story temporary building used as the Children's Surgery Center and the Trauma Nursing Unit. The new building would connect to the existing water and wastewater distribution piping which currently serves the temporary building located on the project site.

To qualify for the LEED® Gold certification, the new building would be required to reduce indoor water consumption by 20 percent (based on the calculated baseline water consumption conditions) which would reduce the project's wastewater demand. To meet the LEED® outdoor water consumption requirement, the proposed project would be required to reduce its landscape water requirement by at least 30 percent, compared to the project site's peak water calculated baseline, or include landscaping which would not require an irrigation system beyond a maximum two-year establishment period.⁷ Further, the new building would be designed and constructed using UC sustainability goals and applicable goals included in the CAP, both of which would improve the new building's water and

⁷ USGBC LEED BD+C New Construction, Outdoor Water Use Required Reduction <http://www.usgbc.org/node/2611372?return=/credits/new-construction/v4/water-efficiency>, accessed August 11, 2015

wastewater efficiency. These actions would result in a reduction in water consumption and wastewater generation over baseline conditions.

Because there would be a reduction in water consumption and wastewater generation compared to existing conditions, the existing water and wastewater distribution piping on the campus as well as the City's water and sewer lines could accommodate the new building's water demand and wastewater generation, and no new pipelines would be required. The impact would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Impact UTIL-3: The proposed project would not require expansion of campus storm drainage conveyance and detention facilities. (*Less than Significant*)

Approximately 75 percent of the campus land area is comprised of impervious surfaces. Half of the campus area discharges storm water into the City's combined sewer system, which serves both storm water runoff and domestic sewer discharge. Storm water from the other half of the campus flows via the City storm drains to the American River. A City-owned storm water detention basin designed for 10-year flows is located on the campus.

With the implementation of the proposed project it is anticipated that that the total area of impervious surfaces would decrease and pervious surfaces would increase slightly (approximately 30,000 GSF) with the demolition of two buildings and the subsequent addition of open space and landscape areas. As a result of the decrease in impervious surfaces, the site storm water runoff volumes would be expected to decrease or stay comparable to existing conditions. Therefore, construction of the proposed project would not require expansion of the campus storm drainage system and/or detention facilities. The impact would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Impact UTIL-4: The proposed project would not generate additional demand for water and would be served from existing entitlements and resources. (*Less than Significant*)

The water service provider, the City of Sacramento, confirmed there is adequate capacity in their large diameter transmission main system surrounding the campus to accommodate the potable water demands associated with campus development under the 2010 LRDP full build-out scenario.⁸ The proposed project would reduce the total amount of building space on the campus. Furthermore, staffing levels are not

⁸ UC Davis Sacramento Campus 2010 LRDP Draft EIR, Section 4.14 Utilities and Service Systems

expected to increase due to the project. In addition, the new building would be designed and constructed using UC sustainability goals and applicable goals included in the Campus CAP, both of which would improve the new building's water efficiency. Further, as discussed above, the proposed project would apply for LEED® Gold certification, which would require the proposed project to reduce indoor water consumption by 20 percent from the calculated baseline water consumption conditions. Therefore the proposed project would not increase the demand for water on the Sacramento campus relative to existing conditions, and the water demand associated with the North Addition Office Building would be served by the existing supplies that are provided to the campus by the City of Sacramento. The impact related to water supply would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Impact UTIL-5: **The proposed project would not generate additional wastewater flows and therefore would not exceed available wastewater treatment capacity. (*Less than Significant*)**

Wastewater from the campus is conveyed to the City of Sacramento combined sewer and storm water facilities. It is treated at the SRWTP, which is owned and operated by the SRCSD. According to the SRWTP 2020 Master Plan, the treatment plant would be expanded to have a design capacity of 218 mgd average dry weather flows by 2020 (SRCSD 2008). The 2010 LRDP EIR estimated that about 0.24 million gallons per day/87.5 million gallons per year of sanitary sewer flows each year would be discharged into the City's combined sewer system at full build-out. Regarding discharge of wastewater, the new building would be designed and constructed using UC sustainability goals and applicable goals included in the Campus CAP. In addition, the proposed project would apply for LEED® Gold certification, which would require the proposed project to reduce indoor water consumption through the installation of water efficient fixtures, including low-flush toilets. As clarified above, these measures would result in the building discharging lower than baseline condition wastewater flows. Furthermore, staffing levels on the campus are not expected to increase due to the project. As a result, overall wastewater discharge from the campus is not expected to increase as a result of the proposed project and could potentially decrease with project implementation. The impact on wastewater treatment capacity would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Impact UTIL-6: The proposed project would not fail to comply with regulations related to solid waste and would not generate solid waste that could not be accommodated by the regional landfill. (*Less than Significant*)

As noted above, the proposed project is composed of three components: construction and occupancy of the North Addition Office Building, demolition of the North/South Wing, and the demolition of the Housestaff Building. In total, the project would reduce building space on the Sacramento campus by approximately 125,000 GSF.

Construction

Demolition of the North/South Wing and the Housestaff Building would result in construction waste. Construction waste materials are expected to be typical construction debris, including concrete, wood, metal, glass, and green wastes. Overall the proposed project is anticipated to achieve a 75 percent recycle construction waste rate to meet the UC equivalent LEED® Material and Resources Credit 2.2⁹.

Concrete waste from demolition of the Housestaff Building would be crushed on-site; effectively creating an aggregate base type material which will then be used to create a crushed-aggregate base parking lot on the former Housestaff Building site. Concrete from demolition of the North/South Wing would be separated from the steel and other assorted debris. The recovered steel would be taken to a licensed recycling center, while the other debris would be taken to a licensed landfill center if it cannot be recycled. Similar to the Housestaff Building site, concrete from the demolition of the North/South Wing would be crushed on the project site, creating an aggregate base type material which would then be used to backfill the hole left by the demolished North/South Wing basement. The remainder of construction waste would be disposed of in a Class III landfill or a mixed debris recycling facility which recycles 50 percent of all waste received. The impact from solid waste generated during demolition and construction would be less than significant.

Operation

The new building includes a nominal amount of building space for growth of programs and therefore, the staffing levels on the campus are not expected to increase due to the proposed project. As a result overall solid waste generation on the campus is not expected to increase due to operation of the new building and could potentially decrease with implementation of the proposed project. To comply with the UC Sustainable Practices Policy , approximately 75 percent of solid waste generated during operation

⁹ USGBC LEED BD+C New Construction, Construction and Demolition Waste Management, <http://www.usgbc.org/node/2601031?return=/credits/new-construction/v4/material-%26-resources>, accessed August 11, 2015

of the proposed project would be diverted from landfills. In addition, to meet the LEED® Storage and Collection of Recyclables requirement, dedicated marked bins for recyclable materials would be placed throughout the project site.¹⁰ Non-recyclable solid waste generated during operation of the new building would be separated into the appropriate waste streams and disposed. Because the volume of waste generated is not expected to increase, the proposed project would not generate solid waste that could not be accommodated by the regional landfill. The impact related to solid waste generated during project operation would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

Impact UTIL-7: The proposed project would not require the expansion of electrical, steam, and chilled water facilities. (Less than Significant)

The campus demand for electricity, chilled and hot water for heating and cooling and process steam is served by the Central Plant. As previously discussed the new building would be constructed to meet all UC sustainability goals, all applicable goals included in the Campus CAP, and would seek a UC equivalent LEED® Gold Certification or better. To qualify for the LEED® Gold Certification the new building would be required to meet the LEED® minimum energy performance requirement and incorporate project design features, including, but not limited to, compliance with the 2013 Title 24 Part 6 California Energy Code¹¹, all of which would reduce the new building's electricity and cooling and heating demands.¹² Furthermore, with the demolition of the North/South Wing and Housestaff Building, the proposed project would reduce the total building space on the campus by approximately 125,000 GSF. Staffing levels would not change with the construction of the new building, which would include an energy efficient HVAC system. As a result, because of the electricity related efficiencies in the new building, the staffing levels remaining the same, and the decrease in building space, overall energy use on the campus would decrease with project implementation, and no expansion of any of the heating and cooling systems or the electrical facilities on the campus would be required. The impact would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

¹⁰ USGBC LEED BD+C New Construction, Storage and Collection of Recyclables, <http://www.usgbc.org/node/2614336?return=/credits/new-construction/v4/material-%26-resources>, accessed August 11, 2015

¹¹ California Energy Commission, 2013 Building Energy Efficiency Standards, <http://www.energy.ca.gov/2012publications/CEC-400-2012-004/CEC-400-2012-004-CMF-REV2.pdf>, accessed August 12, 2015.

¹² USGBC LEED BD+C New Construction, Minimum Energy Performance, <http://www.usgbc.org/node/2613358?return=/credits/new-construction/v4/energy-%26-atmosphere>, accessed August 11, 2015

Impact UTIL-8: **The proposed project would not result in wasteful, inefficient, and unnecessary use of energy; place a significant demand on regional energy supply; or require provision of substantial additional capacity. (*Less than Significant*)**

Staffing levels are not expected to increase due to the proposed project. The new building would be designed and constructed using UC sustainability goals and applicable goals included in the Campus CAP, both of which would minimize the new building's electrical and natural gas consumption. Further, as discussed above, the proposed project would apply for LEED® Gold certification, which would require the new building to achieve a minimum level of energy efficiency to reduce the environmental and economic harms of excessive energy use. Demolition of the North/South Wing and Housestaff Building would reduce building space on the campus by approximately 125,000 GSF, further decreasing the campus' energy consumption. PG&E would continue to provide natural gas to the campus, including the Central Plant, which provide electrical power to the new building. Because energy use would not increase with the project, the project would not place a significant demand on regional energy supply nor require the provision of additional capacity. The impact related to energy use would be less than significant.

Mitigation Measures: No project-level mitigation measures are required.

4.8.4.5 Cumulative Impacts and Mitigation Measures

Cumulative Impact UTIL-1: **Implementation of the proposed project, in conjunction with other past, present and reasonably foreseeable development in Sacramento, could generate a cumulative demand for new or expanded utilities in the region, the construction of which could result in significant environmental impacts, but the project's contribution would not be cumulatively considerable. (*Less than Significant*)**

The cumulative impacts of campus development under the 2010 LRDP on utilities and service systems were evaluated in the 2010 LRDP EIR under LRDP Cumulative Impact UTIL-1. That analysis concluded that full development of the campus under the 2010 LRDP, in conjunction with buildout of the City of Sacramento pursuant to its adopted General Plan, would result in the demand for additional water supply and wastewater treatment capacity. However, the 2010 LRDP development would not require substantial modifications to utility systems, especially off-site utilities. Furthermore, the 2010 LRDP includes sustainability goals to substantially reduce the Campus's water use and wastewater generation.

The extensive programs focused on demand reduction would minimize the project's contribution to cumulative impacts. The University noted that as a result of cumulative growth, including the growth of the campus, some improvements to the utility systems, especially wastewater treatment capacity, could be required. But when such improvements are proposed, they would be evaluated by the City or other regional providers for their environmental impacts and mitigation measures would be incorporated for any impacts that are found to be significant. To the extent that the Sacramento campus contributes to these impacts, as noted in **LRDP Mitigation Measure UTIL-5**, the Campus will contribute its proportional share of the cost of environmental mitigation. Therefore, the contribution of the campus development under the 2010 LRDP to the cumulative impact on utilities would not be cumulatively considerable. Furthermore, for reasons presented above under **Impacts UTIL-1** through **-8**, the proposed project is not expected to place an additional demand on water, wastewater, solid waste, and energy facilities. Therefore, the proposed project's contribution to cumulative impacts on water, wastewater, solid waste, and energy facilities would not be cumulatively considerable.

Mitigation Measures: No project-level mitigation measures are required.

4.8.5 REFERENCES

California Integrated Waste Management Board (CalRecycle). <http://www.calrecycle.ca.gov/>

City of Sacramento. 2011. *2010 Urban Water Management Plan*. October.

Sacramento Regional County Sanitation District. 2008. *Regional Wastewater Treatment Plant 2020 Master Plan*. May.

UC Davis. 2010. *UC Davis Sacramento Campus Long Range Development Plan Draft EIR*. July.

UC Davis Utilities Department. 2015. *Water Consumption Memorandum*. May.

US Green Building Council. <http://www.usgbc.org/home>

5.0 ALTERNATIVES

5.1 INTRODUCTION

The California Environmental Quality Act (CEQA) requires that an EIR describe a range of reasonable alternatives to the project, or to the location of the project that could feasibly avoid or lessen any significant environmental impacts while substantially attaining the basic objectives of the project. An EIR should also evaluate the comparative merits of the alternatives. This section sets forth potential alternatives to the proposed project, and for those alternatives that would achieve most of the basic objectives of the proposed project, evaluates the alternatives for their ability to avoid or reduce the proposed project's significant impacts.

5.2 PROJECT OBJECTIVES

Alternatives considered in the EIR should be feasible and should attain most of the basic project objectives. The University of California Davis Health Systems (UCDHS) objectives of the Hospital Seismic Demolition and Office Replacement project are to:

- Provide replacement space for offices and support functions in the seismically deficient North/South Wing.
- Promote synergy and consolidate departments focused on enhancing quality and the patient experience.
- Foster highest and best use of space adjacent to the hospital.
- Provide modest amount of growth space for academic offices.
- Replace the hospital command center displaced by the Tower 1 renovation project.
- Achieve UC sustainability goals for energy performance.
- Create high quality office environment at reasonable cost.
- Provide office space as non-OSHPD space separate from hospital building.
- Complement the aesthetic and operational aspects of the existing hospital buildings.
- Respect the residential neighborhood to the north.
- Create adjacent outdoor plaza/garden space.

5.3 RANGE OF ALTERNATIVES CONSIDERED

5.3.1 ALTERNATIVES CONSIDERED IN DETAIL

An EIR must briefly describe the rationale for selection of alternatives. The lead agency may make an initial determination as to which alternatives are feasible, and therefore merit in-depth consideration, and which are infeasible. Alternatives that do not meet most of the project objectives need not be considered in detail. Alternatives that are remote or speculative, or have effects that cannot be reasonably predicted, also need not be considered.¹ Based on their ability to meet project objectives and in order to comply with CEQA requirements, the following alternatives are considered in detail in this EIR:

- No Project
- Reduced Size Alternative

5.3.2 ALTERNATIVES ELIMINATED FROM FUTURE CONSIDERATION

The following alternatives were considered by the UCDHS but rejected as infeasible. A brief explanation of the reasons for their exclusion is presented below.

5.3.2.1 Reinforce and Renovate Existing Housestaff Building and Existing Hospital Space

This alternative would seek to seismically reinforce and renovate the Housestaff Building and the North/South Wing of the Main Hospital on the University of California, Davis Medical Center (Sacramento campus). Under this alternative, the proposed North Office Addition Building would not be constructed. Instead, the following would need to occur to implement this alternative:

- An alternative space near the Main Hospital complex would need to be identified and/or developed to allow for the temporary relocation and housing of programs.
- Once programs are temporarily relocated, renovations to the North/South Wing would commence.
- Programs would then be relocated back into the structure.

While this alternative would meet space program goals, this strategy would not be able to meet the schedule mandated by the State of California Office of Statewide Health Planning and Development (OSHPD) that requires that the retrofit be completed by 2020 to address seismic safety. Second, a

¹ California Public Resources Code, Title 14, Division 6, Chapter 3, *California Environmental Quality Act Guidelines*, Section 15126.6(f)(3).

renovation project would add significant financial costs because of the phasing and coordination required to relocate the programs two times.

Third, this alternative would cost more than the total cost to construct equivalent new space. The North/South Wing was expanded in the 1950's and the original seismically deficient, three-story, unreinforced-masonry 1928 structure serves as the core of the building. Retrofitting the 1928 part of the North/South Wing structure to meet seismic requirements would be extremely time consuming and is not cost effective. Excluding the logistics and phasing required to facilitate seismic renovations, the cost of the renovation itself is estimated at \$221.94 million, far greater than the estimated cost of \$76.09 million to construct a new building. Reasons for such a costly renovation include both the age of the building and the specifics of construction. The renovation of the Housestaff Building would also not be cost effective. For all of the above reasons, this alternative was not carried forth for detailed evaluation.

5.3.2.2 Alternate Off-Campus Location

This alternative would involve identifying and securing long-term lease space near the Main Hospital to house programs currently within the seismically deficient North/South Wing and the Housestaff Building. The Main Hospital complex is bordered primarily by residential homes and small commercial structures currently occupied by UCDHS and non-UCDHS tenants; these structures generally do not have enough contiguous space to satisfy all of the project's program requirements. Moreover, one of the programs being relocated from the North/South Wing is the Main Hospital's primary administration in charge of operations. Managing the Main Hospital from a location off-campus would add significant operational costs from a travel and logistics standpoint, and would also lower the standard of patient care. For example, some programs (especially Trauma) need to be within a fifteen-minute walking distance of the surgery rooms within the Main Hospital complex. There is no vacant leasable space that is large enough to satisfy program requirements within a reasonable radius of the Main Hospital.

In order to provide a comprehensive analysis, one lease was analyzed for cost per square foot metrics. However, it is important to note that this lease cannot satisfy the distance or square footage requirements for the programs being relocated out of the North/South Wing, but is used for illustrative purposes. For a ten-year lease that would be built-to-suit by a developer, the total cost (turn-key) is currently estimated at \$87.5 million. While this would be similar to the estimated total cost of \$76.09 million for new University construction, the issue of long-term lease costs would still remain, as many programs being relocated out of the North/South Wing are key hospital administrative departments that require permanent space. This operational reality deems this alternative to be physically impossible in the short term and financially disadvantageous in the long term. For all of the above reasons, this alternative was not carried forth for detailed evaluation.

5.3.2.2 Alternate Location on Campus

This alternative would involve constructing the proposed North Addition Office Building at another location on the campus, while still demolishing the North/South Wing and the Housestaff Building. UCDHS evaluated other potential locations on the campus but concluded that many of the key objectives of the proposed project would not be attained if the proposed office building was not placed immediately adjacent to the Main Hospital. As noted above, some of the key project objectives are to:

- Promote synergy and consolidate departments focused on enhancing quality and the patient experience.
- Foster highest and best use of space adjacent to the hospital.
- Replace the hospital command center displaced by the Tower 1 renovation project.
- Provide office space as non-OSHPD space separate from hospital building.
- Complement the aesthetic and operational aspects of the existing hospital buildings.
- Create high quality office environment at reasonable cost.

For these reasons, this alternative was not carried forth for detailed evaluation.

5.4 ALTERNATIVES EVALUATION

5.4.1 Alternative 1: No Project

Description and Analysis

Under the No Project Alternative, a new office building to house programs being relocated out of the North/South Wing would not be constructed and the two buildings (North/South Wing and Housestaff Building) would not be demolished. However due to seismic safety concerns and meet the OSHPD mandate, programs located in the two buildings would need to be relocated into other existing building space. As noted above in **Section 5.2.3.3, Alternate Off-site Location**, a single leased space that satisfies the distance or square footage requirements for the programs being relocated out of the North/South Wing is not available. Therefore under the No Project Alternative, the various relocated programs would move into existing on-campus space and/or off-campus leased space. The programs would therefore be dispersed and would not have the benefit that would result from consolidation of the programs in one building, as well as easy access to the Main Hospital.

Aesthetics

Under the No Project Alternative, no construction would occur. Therefore, the proposed project's less than significant impacts related to light and glare and visual character and quality would be avoided.

Air Quality

Under the No Project Alternative, no development would occur. Therefore, the proposed project's less than significant air quality impacts would be avoided.

Biological Resources

Given that no new development would take place under this alternative, the proposed project's less than significant biological resources impacts would be avoided.

Cultural Resources

Given that no new development would take place under this alternative, the proposed project's potentially significant impacts to archaeological resources and human remains would be avoided.

Geology and Soils

Given that no new development would take place under this alternative, the proposed project's less than significant impacts related to geology and soils would be avoided.

Greenhouse Gas Emissions

Given that no new development would take place under this alternative, the proposed project's less than significant impacts related to greenhouse gas emissions would be avoided.

Hazards and Hazardous Materials

Given that no new development would take place under this alternative, the proposed project's less than significant impacts related to hazards and hazardous materials would be avoided.

Hydrology and Water Quality

Given that no new development would take place under this alternative, the proposed project's less than significant impacts related to hydrology and water quality would be avoided.

Land Use and Planning

Given that no new development would take place under this alternative, the proposed project's less than significant impacts related to land use and planning would be avoided.

Noise

Given that no new development would take place under this alternative, the proposed project's significant and unavoidable impact related to construction noise and the less than significant operational noise and construction vibration impacts would be avoided.

Public Services and Recreation

Given that no new development would take place under this alternative, the proposed project's less than significant impacts related to public services and recreation would be avoided.

Population and Housing

Given that no new development would take place under this alternative, similar to the proposed project, there would be no impacts related to population and housing.

Transportation and Traffic

Given that no new development would take place under this alternative, the proposed project's less than significant impacts related to both construction and operational traffic would be avoided.

Utilities, Service Systems, and Energy

Given that no new development would take place under this alternative, the proposed project's less than significant impacts to utilities and energy would be avoided.

Conclusion and Relationship to Project Objectives

The No Project Alternative would not allow for the consolidation of important administrative and patient serving departments to take place at the Sacramento campus. In addition, the hospital command center displaced by the Tower 1 renovation project would not be replaced.

The proposed project is part of a series of actions, some of which must be completed by 2020 in order to address seismic safety mandates, maintain hospital licensure, and avoid possible fees for non-compliance as required by OSHPD. The No Project Alternative would not allow the UCDHS to vacate and disconnect

the North/South Wing from the adjoining Main Hospital complex by the 2020 deadline, putting Main Hospital operations at risk functionally, legally and financially.

Further, the No Project alternative would not meet any of the UCDHS project objectives.

5.4.2 Alternative 2: Reduced Building Size Alternative

Description and Analysis

This alternative would reduce the size of the proposed North Addition Office Building by two floors (approximately 43,500 GSF) making it a four-story, approximately 86,500 GSF building, in comparison with the proposed project's approximately 130,000 GSF, six-story building; a reduction of approximately 33 percent. This reduction in building space in the new building would require that the UCDHS either construct a smaller building in another location on the campus or relocate the unhoused programs into existing on-campus space (if available) and/or secure leased space in existing buildings near the campus. There would be no other changes to the proposed project under this alternative; the demolition of the Housestaff Building and the North/South Wing, along with the construction of the new Main Hospital Façade and the two new pedestrian plaza areas would still occur as under the proposed project. As such, access, parking, circulation, and landscape features (including the landscape buffer on the northern edge of the campus) would be the same as under the proposed project.

The intent of this alternative is to reduce the time needed to construct the building and thereby reduce the duration of the significant construction noise impacts associated with construction of the North Addition Office Building.

Aesthetics

The Reduced Building Size alternative would alter the visual character of the Hospital Seismic Demolition and Office Replacement project site to a similar degree as the proposed project. The alternative would be located in an already urban setting, and would replace an existing one-story temporary building. Similar to the proposed project, the alternative would result in less than significant impacts related to scenic vistas and scenic resources. The less than significant impacts related to visual character would be slightly reduced because the building would be smaller in size and therefore less visually prominent. The less than significant impacts related to new sources of light and glare associated with the alternative would be similar to the proposed project because the same exterior design criteria regarding building materials and lighting would be imposed and the same 2010 LRDP mitigation measures would be implemented. Therefore, implementation of this alternative would slightly reduce the project's less than significant impacts related to visual character and light and glare. In the event that a

smaller building is constructed elsewhere on the campus to accommodate the unhoused programs, additional but less than significant visual impacts could occur.

Air Quality

Under the Reduced Building Size Alternative, there would be less building space constructed on the project site. Therefore, the less than significant air quality impacts related to the construction of the North Addition Office Building would be incrementally reduced under the alternative. However, in the event that the remaining space needs are addressed by constructing a small building in another portion of the campus, additional construction phase emissions would occur and the construction-phase impact would be comparable to that of the proposed project. Although the building would be smaller by approximately 33 percent and there would be fewer occupants, the remainder of the population would be accommodated in a new on-campus building and/or in existing on-campus and off-campus building space. Therefore, the vehicle trips to the campus vicinity would still occur, and the overall operational impacts would be similar to that of the proposed project.

Biological Resources

Under the Reduced Building Size Alternative, the North Addition Office Building would be constructed on the same site as under the proposed project and a second building would potentially be constructed on another location on the campus. The North/South Wing and the Housestaff Building would also be demolished under this alternative. The alternative's impacts to biological resources would be the same as those of the proposed project.

Cultural Resources

Similar to the proposed project, construction and demolition activities under this alternative could result in the disturbance of previously undiscovered historic or prehistoric cultural resources, artifacts, or human remains. However, LRDP mitigation measures have been incorporated and made a part of the proposed project, and therefore the project's impact on cultural resources would be less than significant. This alternative would construct the North Addition Office Building on the same site as the proposed project and potentially a second building on another location on the campus. The North/South Wing and the Housestaff Building would also be demolished under this alternative. Therefore, impacts on cultural resources would be comparable and less than significant.

Geology and Soils

The construction sites under this alternative are the same as that of the proposed project, with the possible addition of one building site elsewhere on the campus. The same geologic conditions would apply to the Reduced Building Size alternative. Therefore, impacts related to geology and soils would be comparable and less than significant.

Greenhouse Gas Emissions

The Reduced Building Size Alternative would reduce the amount of building square footage in comparison to the proposed project by approximately 33 percent. Therefore, greenhouse gas emissions during construction would be incrementally less or comparable in the event that a second smaller building is also constructed on the campus. Similar to the proposed project, impacts related to greenhouse gas emissions would be less than significant.

Hazards and Hazardous Materials

The project components for this alternative are the same as that of the proposed project. Therefore, similar to the proposed project, the alternative would require decommissioning and demolition of the existing Housestaff Building and the North/South Wing, and the alternative would result in the potential exposure of construction workers, the public, and the environment to asbestos-containing building materials, lead-based paint, and other hazardous building materials. As with the proposed project, compliance with federal, state, and local regulations, as well as existing campus policies and procedures, including enclosures and dust control measures, would minimize possible exposure to construction workers, the public, and the environment, and the impacts would be less than significant. Therefore, impacts under this alternative would be comparable to the impacts of the proposed project.

Hydrology and Water Quality

The construction sites under this alternative are the same as that of the proposed project, with a possible addition of one more, smaller site for a second office building elsewhere on the campus. The same local, state and federal regulations regarding hydrology and water quality would apply to the Reduced Building Size alternative. Therefore, impacts related to hydrology and water quality would be comparable and less than significant.

Land Use and Planning

Since the Reduced Building Size Alternative would develop largely the same construction sites, as with the proposed project it would not result in any land use and planning impacts.

Noise

The proposed Hospital Seismic Demolition and Office Replacement project would result in significant noise impacts during construction of the North Addition Office Building and the demolition of the North/South Wing and Housestaff Building. Under the Reduced Building Size Alternative, there would be less building space constructed, which would reduce the duration over which nearby residents would be exposed to construction noise associated with the new building. However, as the location of the construction project would be the same and the two buildings would also be demolished under this alternative, despite the implementation of LRDP mitigation measures and project-specific mitigation measures, noise impacts would remain significant and unavoidable. Therefore, the alternative would marginally reduce but not avoid the proposed project's significant and unavoidable impact. All other noise impacts would be comparable to the proposed project and less than significant.

Population and Housing

The proposed project would construct a new office building, allowing for the relocation of Campus programs and the subsequent demolition of seismically deficient space. There would be no change to staffing levels under the proposed project and thus no impact to population and housing. The Reduced Building Size Alternative would reduce the size of the office building in comparison to the project, with the unhoused programs relocated to another smaller new building or into existing space on or off campus. Similar to the proposed project, there would be no impact associated with population and housing.

Public Services and Recreation

The Reduced Building Size Alternative would reduce the amount of building space at the project site in comparison to the proposed project but would require the addition of new building space or leased space at other locations. Therefore, demands for public services and recreational facilities would be comparable. Similar to the proposed project, impacts related to public services and recreation would be less than significant.

Transportation and Traffic

As a result of a somewhat reduced construction period, the Reduced Building Size Alternative would result in a reduced construction traffic impact in the first phase of the proposed project, and similar to the proposed project the impact would be less than significant. Traffic associated with the subsequent phases involving the demolition of the two buildings would be the same as evaluated for the proposed project. As with the proposed project, all traffic impacts under the alternative would be less than significant.

Utilities, Service Systems, and Energy

The Reduced Building Size Alternative would reduce the amount of building space on the project site in comparison to the proposed project by approximately 33 percent but would require additional new building space or leased space at other locations. Therefore, demand for utilities and energy would be comparable or somewhat greater due to inefficiencies associated with dispersed locations. Similar to the proposed project, impacts related to utilities and energy would be less than significant.

Conclusion and Relationship to Project Objectives

This alternative would partially achieve the basic objectives of the proposed project which are to provide replacement space for offices and support functions in the seismically deficient North/South Wing, at a location proximate to the Main Hospital. However, the 33 percent reduction in the building space under this alternative would reduce the ability of this alternative to provide all the necessary space. The remaining needed space would need to be provided either in a smaller new building elsewhere on the campus or in existing on- or off-campus space. As a result, this alternative would not meet several key objectives of the proposed project which are to promote synergy and consolidate departments focused on enhancing quality and the patient experience; foster highest and best use of space adjacent to the Main Hospital; provide modest amount of growth space for academic offices; replace the hospital command center displaced by the Tower 1 renovation project; and create high quality office environment at reasonable cost.

5.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The *State CEQA Guidelines* require that an environmentally superior alternative be identified among the alternatives evaluated in detail.

The No Project Alternative is considered the Environmentally Superior Alternative because it would avoid all of environmental impacts of the proposed project. However, it would not meet the objectives of the proposed project. Further, as the No Project Alternative would not allow the UCDHS to vacate and disconnect the North/South Wing from the adjoining Main Hospital complex by the 2020 deadline.

If the environmentally superior alternative is the No Project Alternative, *State CEQA Guidelines* Section 15126(d)(2) requires that the EIR shall identify another alternative as environmentally superior. Therefore, the remaining alternative, the Reduced Building Size Alternative, is considered the environmentally superior alternative because this alternative would result in similar or slightly lower impacts than the proposed project with respect to all resource areas, including significant impacts during construction related to noise. However, this alternative would not fully realize the project objective to

accommodate the space needs of programs, and other support spaced needed for the Sacramento campus to promote synergy and consolidate departments focused on enhancing quality and the patient experience. By decreasing the amount of space, the Reduced Building Size Alternative would not allow the campus to foster highest and best use of space adjacent to the Main Hospital, provide modest amount of growth space for academic offices, replace the hospital command center displaced by the Tower 1 renovation project, and create high quality office environment at reasonable cost.

**Table 5.0-1
Summary Comparison of Project Alternatives**

Resource Topic	Proposed Project	Alternative 1 No Project	Alternative 2 Reduced Project
Aesthetics	LTS	No Impact	Reduced
Air Quality – Construction	LTS	No Impact	Reduced
Air Quality – Operational	LTS	No Impact	Comparable
Biological Resources	LTS	No Impact	Comparable
Cultural Resources	LTS	No Impact	Comparable
Geology & Soils	LTS	No Impact	Comparable
Greenhouse Gas Emissions	LTS	No Impact	Comparable
Hazards and Hazardous Materials	LTS	No Impact	Comparable
Hydrology & Water Quality	LTS	No Impact	Comparable
Land Use	NI	No Impact	Comparable
Noise – Construction	SU	No Impact	Reduced, but still SU
Noise – Operational	LTS	No Impact	Comparable
Population and Housing	NI	No Impact	No Impact
Public Services & Recreation	LTS	No Impact	Comparable
Traffic – Construction	LTS	No Impact	Reduced
Traffic Operational	LTS	No Impact	Comparable
Utilities – Water	LTS	No Impact	Comparable
Utilities – Wastewater	LTS	No Impact	Comparable
Utilities – Solid Waste	LTS	No Impact	Comparable
Utilities – Electricity	LTS	No Impact	Comparable
Utilities – Natural Gas	LTS	No Impact	Comparable
Utilities - Telecommunications	LTS	No Impact	Comparable
<hr/> <p><i>KEY</i> <i>LTS Less than significant impact</i> <i>NI No Impact</i> <i>SU Significant and unavoidable</i></p>			

6.0 OTHER CEQA CONSIDERATIONS

6.1 INTRODUCTION

Section 15126 of the *California Environmental Quality Act (CEQA) Guidelines* states that an Environmental Impact Report (EIR) must include a discussion of the following three topics:

- Significant environmental effects which cannot be avoided if the proposed project is implemented;
- Significant irreversible environmental changes which would be involved in the proposed project should it be implemented; and
- Growth inducing effects of the proposed project.

In addition, Section 15128 of the *State CEQA Guidelines* requires a brief statement of the reasons that various possible effects of a project have been determined not to be significant and, therefore, are not evaluated in the EIR. The following sections address each of these types of impacts.

6.2 SIGNIFICANT AND UNAVOIDABLE EFFECTS

An EIR must identify significant impacts associated with implementation of the proposed project that could not be mitigated to a less than significant level. As part of the certification process, The Board of Regents of the University of California (The Regents) will make a final decision as to the significance of impacts and the feasibility of mitigation measures in this EIR. As detailed in **Section 4.0**, implementation of the proposed project would result in the following significant impacts that would not be mitigated to a less than significant level:

6.2.1 Noise

Impact NOI-1: Construction of the proposed project would expose existing off-site and on-site receptors to elevated noise levels. (Potentially Significant; Significant and Unavoidable)

6.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 15126.2(c) of the *State CEQA Guidelines* states that an EIR must include a discussion of any significant irreversible environmental changes that would be caused by a proposed project. Generally, a project would result in significant irreversible environmental changes if:

- the primary and secondary impacts would generally commit future generations to similar uses;

- the proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy);
- the project would involve a large commitment of nonrenewable resources; or
- the project involves uses in which irreversible damage could result from any potential environmental accidents associated with the project.

Implementation of the proposed project would continue to commit the campus to institutional uses, thereby ruling out other land uses during operation of the campus. The University's ownership of the campus represents a long-term commitment of the Sacramento campus lands to an institutional use. Restoration of the campus to pre-developed conditions is not feasible given the levels of disturbance and capital investment.

Resources that would be permanently and continually consumed by project implementation include water, electricity, natural gas, and fossil fuels. In addition, construction activities related to the proposed project would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels (including fuel oil, natural gas, and gasoline) for automobiles and construction equipment.

As discussed in **Section 3.0**, the North Addition Office Building would be constructed to meet all UC sustainability goals, all applicable goals included in the Campus Climate Action Plan (CAP) and would seek a UC equivalent LEED® Gold Certification or better. In addition, a detailed set of design criteria (e.g., maximize north light and glazing, minimize solar heat gain) for both the interior and exterior of the new building would ensure that the proposed project would not result in an exorbitant amount of resources being consumed. Therefore, the consumption of these resources during construction and operation of campus facilities would not represent unnecessary, inefficient, or wasteful use of resources.

As the new building would be constructed to meet LEED® Gold Certification, construction and operation of the proposed project would include strategies to minimize water consumption and solid waste generation. Energy efficient appliances as well as a building-cooling efficiency system would be installed prior to operation of the new building. In addition, operation of the new building would be in accordance with specifications contained in Title 24 of the California Code of Regulations (CCR) and State Executive-Order B-29-15.¹

Construction and operation of the proposed project would comply with all applicable building codes, campus conservation features, and would ensure that all natural resources, including water, are

¹ Executive Order B-29-15 requires consumption of potable water to be reduced by 25 percent statewide. This includes limiting outdoor watering with potable water to two days per week.

conserved to the maximum extent feasible. Overall, the variety of energy and water conservation measures that would be implemented with the proposed project would not involve a large commitment of nonrenewable resources.

The *State CEQA Guidelines* also require a discussion of the potential for irreversible environmental damage caused by an accident associated with the project. While the campus uses, transports, stores, and disposes of hazardous wastes, as described in **Section 4.4, Hazards and Hazardous Materials**, the campus complies with all applicable state and federal laws and existing campus programs, practices, and procedures related to hazardous materials, which reduces the likelihood and severity of accidents that could result in irreversible environmental damage. In the history of UC ownership of the campus, there have been no accidents resulting in irreversible environmental damage, indicating that current practices with respect to hazardous materials handling are adequate, and thus the potential for the proposed project to cause irreversible environmental damage from an accident or upset of hazardous materials, is considered low.

6.4 GROWTH-INDUCING IMPACTS

This section evaluates the potential for the proposed project to induce growth in the Sacramento area. Section 15126.2(d) of the *State CEQA Guidelines* requires that an EIR include a discussion of the potential for a proposed project to foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.

The *State CEQA Guidelines* do not provide specific criteria for evaluating growth inducement and state that it must not be assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment. Growth inducement is generally not quantified, but is instead evaluated as either occurring or not occurring with implementation of a project. The identification of growth-inducing impacts is generally informational, and mitigation of growth inducement is not required under CEQA. It must be emphasized that the *State CEQA Guidelines* require an EIR to “discuss the ways” that a project could be growth inducing and to, “discuss the characteristics of some projects that may encourage ... activities that could significantly affect the environment.” However, the *State CEQA Guidelines* do not require an EIR to predict or speculate specifically where such growth would occur, in what form it would occur, or when it would occur.

For the purposes of this analysis, the proposed project would be considered growth-inducing if it meets either of the following criteria:

- Implementation of the proposed project causes economic expansion and population growth through employment expansion and/or the construction of new housing, or

- Implementation of the propose project removes an obstacle to population growth (for example, through the expansion of public services or utilities into an area that does not presently receive these services), or through the provision of new access to an area, or a change in a restrictive zoning or General Plan land use designation.

An evaluation of the proposed project against these criteria is provided below.

6.4.1 Direct Employment and Population Growth

Potential growth inducing impacts of the proposed project are evaluated with respect to a study area that includes the City of Sacramento and Sacramento County. This area is within a reasonable commuting distance of the campus. The project site does not have any existing housing uses, nor do people live on the project site. The staffing levels on the campus would not increase due to the proposed project and no new housing is proposed. Thus, implementation of the proposed project would not directly increase the study area population by providing employment expansion and or new housing opportunities. The proposed project would not be considered growth-inducing with respect to direct employment and population growth.

6.4.2 Indirect Employment Growth

Indirect jobs are those that are created or supported when the campus purchases goods and services from businesses in the region, and induced jobs are created or supported when wage incomes of those employed in direct and indirect jobs or students are spent on the purchase of goods and services in the region. The operation of the new building would not result in the creation of new indirect growth and/or induced jobs, as staffing levels on the campus would not change. Further, as operation of the new building would not result in employment growth there would be no increased demand for goods and services.

6.4.3 Indirect Population Growth

As discussed above, implementation of the proposed project would not result in indirect and/or induced employment and would not include any new housing opportunities. Thus, implementation of the proposed project would not result in additional population growth.

6.4.4 Removal of an Impediment to Growth

Growth in an area may result from the removal of physical impediments or restrictions to growth, as well as the removal of planning impediments resulting from land use plans and policies. In this context, physical growth impediments may include non-existent or inadequate access to an area or the lack of

essential public services (e.g., water services), and planning impediments may include restrictive zoning and/or general plan designations.

The campus is presently developed and is supplied by a full contingent of public services and utilities. The new building would be served by existing water, wastewater, gas, communications, and electrical lines that run through the project site or along the site boundary. Any infrastructure improvements upgrades would serve only the campus. Therefore, the proposed utilities would enable growth envisioned for the proposed project, but would not induce growth beyond that planned for the project site. Therefore, implementation of the proposed project would not directly remove an obstacle to population growth. Furthermore, implementation of the proposed project does not include the establishment of a new public service or increase in staffing levels. The existing public services would accommodate the new building. Therefore, the proposed project would not be considered growth-inducing with respect to service/utility infrastructure.

The new building's staff members would continue to utilize the existing circulation system surrounding the project site and no modifications would be made to surrounding roadways. It would, therefore, not be considered growth-inducing with respect to access.

As noted above, growth can also be induced if restrictions to growth and other planning impediments resulting from land use plans and policies, including restrictive zoning and/or general plan designations are removed. The proposed project would have no effect on land use designations for adjoining lands. The proposed project would not facilitate additional population growth on the campus or in the surrounding communities. Therefore, implementation of the proposed project would not be considered growth-inducing with respect to land use plans and policies.

6.4.5 Conclusion

As discussed above, the proposed project would not remove impediments to growth and/or result in indirect/direct population and/or employment growth. As the staffing levels would remain the same, implementation of the proposed project would not create economic growth in the area by increasing the demand for local goods and services. Therefore, implementing the project would not be considered growth inducing.

6.5 EFFECTS FOUND NOT TO BE SIGNIFICANT

Section 15128 of the *State CEQA Guidelines* requires an EIR to briefly describe any potential environmental effects that were determined not to be significant during the Initial Study and EIR scoping process and were, therefore, not discussed in detail in the EIR. A discussion of the effects of the proposed project on

agricultural and forest resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, population and housing, public services, recreation, and transportation and circulation that were found not to be significant is presented below. Other impacts found to be less than significant in the EIR are discussed in detail in **Section 4.0, Environmental Setting, Impacts, and Mitigation Measures**, and summarized in **Section 2.0, Executive Summary**.

6.5.1 Agricultural and Forestry Resources

Would the project:

- convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?
- conflict with existing zoning for agricultural use, or a Williamson Act contract?
- conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?
- result in the loss of forest land or conversion of forest land to non-forest use?
- involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

The project site is developed and is located near commercial and residential land uses. The Farmland Mapping and Monitoring Program has designated the project site as Urban and Built-Up Land.² There are no Williamson Act contracts within its boundaries or in areas in the vicinity. No agricultural land, forest land, or related uses are found in the area or on the campus. The proposed project would not result in the conversion of farmland to a non-agricultural use or forest land to a nonforest use. Therefore, implementation of the proposed project would not impact agricultural or forest resources.

6.5.2 Air Quality

Would the project:

- create objectionable odors affecting a substantial number of people?

² California Department of Conservation, Farmland Mapping and Monitoring Program, <http://www.conservation.ca.gov/dlrp/fmmp/Pages/Index.aspx>, accessed August 13, 2015

The proposed project includes the demolition of the North/South Wing in the Main Hospital and Housestaff Building and construction of the North Addition Office Building. Uses associated with the new building would not include industrial and/or manufacturing operations, food processing, and/or agricultural waste processing. Therefore, construction and operation of the proposed project would not result in the production of objectionable odors. No significant impacts are identified for this threshold.

6.5.3 Biological Resources

Would the project:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The project site is fully developed. No sensitive plant species are located on the project site. As discussed in the LRDP EIR, Cooper's hawk and Purple martin nests' have been identified on the campus. **Mitigation Measure BIO-2**, included in the LRDP EIR, would be implemented to ensure potential impacts to nesting birds from construction of the proposed project would remain less than significant. Under **LRDP Mitigation Measure BIO-2** a pre-construction nesting bird survey of the project vicinity would be required if construction of the proposed project occurs during the nesting/breeding season of any native bird species (typically February through August in the project region). With implementation of the **LRDP EIR Mitigation Measure BIO-2** construction impacts to nesting birds would be less than significant.

The project site is located in an urban area and is developed with structures and infrastructure. No riparian, native, or sensitive habitats, as defined by the US Fish and Wildlife Service and/or the California Department of Fish and Wildlife encompass the project site. Further, no jurisdictional wetlands and/or water courses are located on the campus. Development of the proposed project would not interfere with the migration of any wildlife species (including migratory fish) or impede the use of native wildlife nursery sites. No significant impacts are identified for these thresholds.

The project site is not located within a Habitat Conservation and/or Natural Community Conservation Plan. Although construction of the proposed project would require the removal of ornamental landscaping trees, the existing heritage trees located on the project site would not be removed. Thus, implementation of the proposed project would not result in significant impacts to the existing biological resources located within the vicinity of the project site.

6.5.4 Cultural Resources

Would the project:

- Cause a substantial adverse change in the significance of a historical resource defined in Section 15064.5?
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?
- Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?
- Disturb any human remains, including those interred outside of formal cemeteries?
- Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in public Resources Code 21074?

The proposed project would include the demolition of the North/South Wing of the Main Hospital, constructed in 1929 and 1951 and the demolition of the Housestaff Building, constructed in 1916. In accordance with the **LRDP EIR Mitigation Measure CUL-1a** a historical evaluation of both structures was completed in 2015 as documented in the Initial Study for the proposed project. In response to the Notice of Preparation, several members of the public expressed a desire for the Housestaff Building to not be demolished. The expressed interest for retaining the Housestaff building focused on the old style of architecture and a desire for the building to be recognized as a historic structure. As described above, a historic building evaluation was completed for the Housestaff Building and for the North/South Wing of the Main Hospital. The evaluation determined that neither structure qualifies for listing on the National

Register of Historic Places and/or the state Office of Historic Preservation. Thus, no significant impacts were identified for this threshold.

The campus has been subject to extensive ground disturbance in conjunction with the construction of existing and former buildings, roadways, and landscape areas. An archival search completed for the LRDP EIR revealed that no archaeological resources have been recovered on the campus. The probability of uncovering archaeological and/or paleontological resources on the project site is considered low. In the unlikely event cultural resources are uncovered during construction of the proposed project, implementation of **LRDP Mitigation Measures CUL-2a through CUL-2c**, included in the LRDP EIR would reduce potential impacts to a less than significant level.

A burial ground exists on the northern portion of campus adjacent to the area originally occupied by the Sacramento County Hospital building. The proposed project would be required to implement **LRDP Mitigation Measures CUL-3a through CUL-3d**, included in the LRDP EIR. In the unlikely event that human remains are accidentally uncovered during construction of the proposed project, **LRDP Mitigation Measures CUL-3a through CUL-3d** would reduce impacts to the uncovered human remains to a less than significant level. As no tribal cultural resources have been identified on the campus and the new building would be located on a previously disturbed and developed site, no impacts to tribal cultural resources have been identified. Thus, implementation of the proposed project would not impact cultural resources.

6.5.5 Geology, Soils, and Seismicity

Would the project:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.
 - Strong seismic ground shaking?
 - Seismic-related ground failure, including liquefaction?
 - Landslides?
- Result in substantial soil erosion or the loss of topsoil?

- Be located on a geologic unit or soil that is unstable, or the loss of topsoil, or that would become unstable as a result of the project, and potentially result in on- or off-site, landslide, lateral spreading, subsidence, liquefaction or collapse?
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?
- Have soils incapable of adequately support the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

The proposed project includes the construction of a new office building on the campus to allow for the relocation of critical operational support programs from two seismically deficient structures, the North/South Wing of the Main Hospital and the Housestaff Building, and the subsequent demolition of these structures. This project is part of a series of actions that must be completed by 2020 to address seismic safety mandates required by the State of California Office of Statewide Health Planning and Development (OSHPD).

The campus and surrounding area are not located within an Alquist-Priolo Earthquake Fault Zone. The project site is located in Northern California, an area which is prone to earthquakes and strong seismic shaking. Fault rupture on the project site is unlikely to occur as the Dunnigan Hills Fault, the nearest active fault, is more than 40 miles north of the project site. Further, the project site and surrounding area's topography is characterized by flat plains and would not be susceptible to landslides.

The project site is developed with limited areas of exposed soil. Construction and operation of the proposed project would not result in soil erosion or loss of topsoil. Groundwater was determined to be approximately 18 to 32 feet below the project site. Implementation of **LRDP Mitigation Measure GEO-1** would reduce impacts associated with liquefaction and expansive soils. This includes building structural damage which could cause human injuries. The project applicant would be required to conduct a site-specific design-level geotechnical investigation, which would include a seismic evaluation of ground acceleration as well as existing soil conditions on the project site. In addition, the proposed project would be design to meet the California Building Code (CBC) structural requirements for buildings located on expansive soils. Therefore, impacts related to liquefaction and expansive soils would be reduced to a less than significant level.

The proposed project would not include alternative wastewater disposal systems and/or the use of septic tanks. Based on the analysis above, implementation of the proposed project would not result in a significant impact to geology and soils.

6.5.6 Hazards and Hazardous Materials

Would the project:

- For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport, or public use airport, would the project result in a safety hazard for people residing or working in the project area?
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The proposed project is not located within an airport land use plan, within two miles of a public airport, or within the vicinity of a private airstrip. The public airport closest to the project site, the Sacramento International Airport, is located approximately 20 miles northeast of the campus. The proposed project includes the demolition of the North/South Wing of the Main Hospital and Housestaff Building, as well as the construction of the North Addition Office Building. No changes would be made to the campus circulation system and the proposed project would not physically interfere with any adopted emergency response and/or evacuation plans. Construction vehicles and equipment would be stationed on the project site to allow for continued operation of the UC Davis Hospital. The project site is located in a developed area surrounded by commercial and residential uses and is not located in an area susceptible to wildland fires. Therefore, impacts related to the hazard thresholds above would be less than significant.

6.5.7 Hydrology and Water Quality

Would the project:

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?
- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows?
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?
- Inundation by seiche, tsunami or mudflow?

The proposed project includes the demolition of the Housestaff Building and North/South Wing and construction of the North Addition Office Building. Buildout of the proposed project would not alter the campus' existing drainage pattern but would reduce the total area of impervious surfaces which would decrease the volume of stormwater runoff. Stormwater runoff would continue to drain into the City's combined sewer system, as well the City storm drains and eventually to the American River.

Development of the proposed project would not interfere with groundwater recharge. Further, as the existing campus land area consists of approximately 75 percent impervious and 25 percent pervious surfaces, it is anticipated that the total area of impervious surfaces would actually decrease slightly with the demolition of two buildings and the subsequent addition of open space and landscape areas.

A City-owned storm water detention basin designed for 10-year flows is located on the campus. The proposed project does not include any residential uses. Further, the new building would not be constructed in a designated 100-year floodplain. The campus is not located within the vicinity of a levee or dam, is generally flat and is not located in close proximity to any large bodies of water. Thus the

proposed project would not be subject to inundation by seiche, tsunami, or mudflow. Therefore, impacts would be less than significant.

6.5.8 Land Use and Planning

Would the project:

- Physically divide an established community?
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigation an environmental effect?
- Conflict with any applicable habitat conservation plan or natural community conservation plan?
- Result in development of land uses that are substantially incompatible with existing adjacent land uses or with planned uses?

The proposed project would be located on the campus and would not divide an established community or conflict with any applicable land use plan or habitat conservation plan. The proposed project would be consistent with the land uses designation included in the LRDP and develop the project site for hospital related uses. The height and mass of the North Addition Office Building would be harmonious with that of existing adjacent buildings and would be appropriate for its setting. A 40-foot landscaped buffer would be incorporated along the edge of the campus to be located between the existing facilities equipment yard and the University Police building along V Street as required under LRDP Mitigation Measure AES-1. Upon completion of the proposed project the former Housestaff Building site and North/South Wing site would be landscaped and repurposed as open space. The North Addition Office Building would be constructed north of the Main Hospital on the site currently occupied by an approximately 30,000 square foot single-story temporary building used as the Children's Surgery Center and the Trauma Nursing Unit that will be demolished under a separate project in late 2015. Therefore, impacts related to the land use thresholds above would be less than significant.

6.5.9 Mineral Resources

Would the project:

- result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the state?
- result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

According to the State of California Department of Mines and Geology, Mineral Resource Zones and Resource Sectors map, the project site is located in an area designated as MRZ-3. This designation refers to an area that contains mineral deposits, the significance of which cannot be evaluated from available data. Development under the proposed project would not involve extraction of mineral resources, so would not result in the loss of availability of a known mineral resource. Therefore, implementation of the project would not impact mineral resources.

6.5.10 Population and Housing

Would the project:

- Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

As discussed above, the proposed project does not include a residential component. Implementation of the proposed project would not result in indirect/direct population and/or employment growth. As the staffing levels would remain the same, implementation of the proposed project would not be growth inducing. Therefore, implementation of the proposed project would not impact the campus and/or surrounding area population.

6.5.11 Public Services

Would the project:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:
 - Fire protection
 - Police protection
 - Schools
 - Parks
 - Other public facilities

The proposed project includes the demolition of the North/South Wing of the Main Hospital, the demolition of the Housestaff Building, and the construction of the North Addition Office Building. In total, the proposed project would reduce building area on the campus by approximately 125,000 gross square feet (GSF). Campus staffing levels would not increase due to the proposed project. Further, the proposed project would not directly or indirectly induce population growth on campus or in the surrounding area. Thus, the proposed project would not result in an increase in the number of police and fire protection calls and would not significantly impact the surrounding libraries, parks, or schools. Therefore, implementation of the project would not impact public services.

6.5.12 Transportation, Circulation and Parking

Would the project:

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?
- Result in inadequate emergency access?

The new building would be a six-story building and would not result in a change to air traffic patterns as the Sacramento International Airport is approximately 20 miles northeast of the campus. No changes would be made to the campus circulation system and the proposed project would not physically interfere with emergency access to the Main Hospital or any other buildings on the campus. During the demolition and construction phases, construction vehicles and equipment would be stationed on the project site to ensure access to the Main Hospital and surrounding buildings. No significant impacts are identified for these two transportation thresholds.

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